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Record of Decision:**

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INDIANAPOLIS, IN
07/28/1999**

Decision Document
for
**AOC 9 - Northwest Corner of
Building 3000**

Naval Air Warfare Center
Indianapolis, Indiana



Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0012

July 1999

**DECISION DOCUMENT
FOR
AOC 9 - NORTHWEST CORNER OF BUILDING 3000**

**NAVAL AIR WARFARE CENTER
INDIANAPOLIS, INDIANA**

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:
Southern Division
Naval Facilities Engineering Command
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North Charleston, South Carolina 29406**

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**CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0012**

JULY 1999

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ACRONYMS

AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirements
ATSDR	Agency for Toxic Substances and Disease Registry
BCT	BRAC Clean-up Team
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIP	Community Involvement Plan
CFR	Code of Federal Regulations
COPC	Chemicals of Potential Concern
DCE	Dichloroethene
IDEM	Indiana Department of Environmental Mangement
IR	Installation Restoration
mg/kg	milligram per kilogram
NAVFAC	Naval Facilities Engineering
NAWC	Naval Air Warfare Center Command
NCP	National Contingency Plan
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
PRG	Preliminary Remediation Goal
RAB	Restoration Advisory Board
RBC	Risk Based Concentration
RI	Remedial Investigation
RCRA	Resource Conservation and Recovery Act
SOUTHDIV	Southern Division, Naval Facility Engineering Command
SSL	Soil Screening Level
TCA	1,1,1-Trichloroethane
TCE	Trichloroethene
USEPA	U.S. Environmental Protection Agency
USGS	United States Geological Survey
VOC	Volatile Organic Compound

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1.0 DECLARATION OF THE DECISION DOCUMENT

1.1 SITE NAME AND LOCATION

**AREA OF CONCERN NINE (AOC9)
NORTHWEST CORNER OF BUILDING 3000
NAVAL AIR WARFARE CENTER (NAWC) INDIANAPOLIS
INDIANAPOLIS, INDIANA**

1.2 STATEMENT OF BASIS AND PURPOSE

This Decision Document presents the selected remedial action for the northwest corner of Building 3000 (AOC9) NAWC Indianapolis, Indianapolis, Indiana, developed in accordance with CERCLA, as amended by SARA, to the extent practicable, the National Contingency Plan. This decision is based on the administrative record for this Site, at the Warren Library, Indianapolis, Indiana.

The State of Indiana and the U.S. EPA concur on the selected remedy.

1.3 ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Decision Document, may present an imminent and substantial endangerment to public health, welfare, or the environment.

1.4 DESCRIPTION OF THE SELECTED REMEDY

AOC 9 encompasses contamination in the Northwest Corner of Building 3000. Based on current Site conditions it has been determined that future risk to human health and the environment would be within acceptable limits assuming continued industrial use of the property. Therefore, no further remedial action beyond the implementation of those institutional (i.e. land use) controls specified in this document is planned.

The major components of those institutional controls selected for implementation include:

- Restricting future land use to non-residential purpose to specifically include, but not limited to, the prohibition of playgrounds, day care facilities and facilities for the elderly.


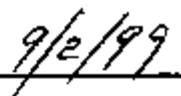

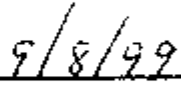

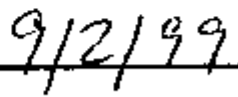
- Retention of a right of access by the Navy, and Federal and State regulators for purposes of undertaking future environmental investigations, inspections and/or remedial actions.

1.5 STATUTORY DETERMINATION

Because this remedy will result in contamination remaining on-site, the Navy will conduct a review every five years after the commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

1.6 DECLARATION

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to a remedial action, and is cost-effective. This remedy utilizes alternative solutions and treatment technologies to the maximum extent practical for this site. However, because active treatment of the principal threats of the site was not found to be practical, this remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. The size, location, and amount of contamination found at AOC 9 precludes a remedy in which contaminants could be treated effectively.

 _____ Carl Loop, US Navy, Southern Division (SOUTHNAVFACENGCOM) BCT Member	 _____ Date
Concurrence:	
 _____ Denise Boone, USEPA, Region V BCT Member	 _____ Date
 _____ Sean Grady, Indiana Department of Environmental Management BCT Member	 _____ Date

2.0 DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND DESCRIPTION

NAWC Indianapolis is located in Marion County, east of downtown Indianapolis within a predominantly residential/ commercial area (See Figure 2-1). NAWC Indianapolis is bordered by East 21st Street to the north, Arlington Avenue to the west, East 16th Street to the south, and a small waterway, Windsor Branch, to the east. Most of the commercial establishments within the immediate vicinity of NAWC Indianapolis are located along East 21st Street or Arlington Avenue. Businesses in the area include gas stations, car washes, dry cleaners, and office buildings. The areas immediately beyond the businesses lining East 21st and Arlington Avenue are predominantly residential, as are the areas south and east of the NAWC.

In late 1995, the Department of Defense decided to place the NAWC Indianapolis on the base realignment and closure list. This initiated the conversion of the facility from a government-owned and operated facility to the private sector. The NAWC Indianapolis is currently under the direction of Raytheon, under lease from the City of Indianapolis, who, in turn, leases the property from the U.S. Government. Figure 2-2 shows a layout of NAWC Indianapolis and the location of AOC 9.

The ground surface at NAWC Indianapolis is generally flat, sloping slightly from the northern boundary toward the southeast. Surface water drainage at the facility mostly occurs as overland flow during heavy precipitation events. This overland flow is collected and routed through a storm sewer system to two discharge locations: (1) a nearby stream to the southeast of the facility via permitted spillways and an off-site storm sewer system; and (2) a water retention pond in the southwest portion of the site. The retention pond was constructed to facilitate surface water infiltration and to alleviate ponded water on the facility grounds.

The unconsolidated glacial overburden is approximately 150 feet thick at the facility and is comprised of three aquifers or aquifer zones, namely the shallow aquifer zone, middle aquifer and deep aquifer. Each of these varies in thickness, composition, and horizontal extent throughout the site area. The shallow aquifer may be unconfined or semi-confined in some areas where it is near to the ground surface or where it is not overlain by till or other low permeability materials. The shallow aquifer ranges in thickness from 0.5 to 25 feet; the middle aquifer ranges in thickness from 1 to 34 feet; and the deep aquifer ranges in thickness from 5 to 26 feet. The shallow and middle aquifers are only believed to be horizontally continuous on the eastern and southern portions of NAWC Indianapolis, whereas the deep aquifer is

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SOURCE BASEMAP IS A PORTION OF THE USGS INDIANAPOLIS EAST, IND QUADRANGLE (7.5 MINUTE SERIES, 1967, PHOTOREVISED 1980)

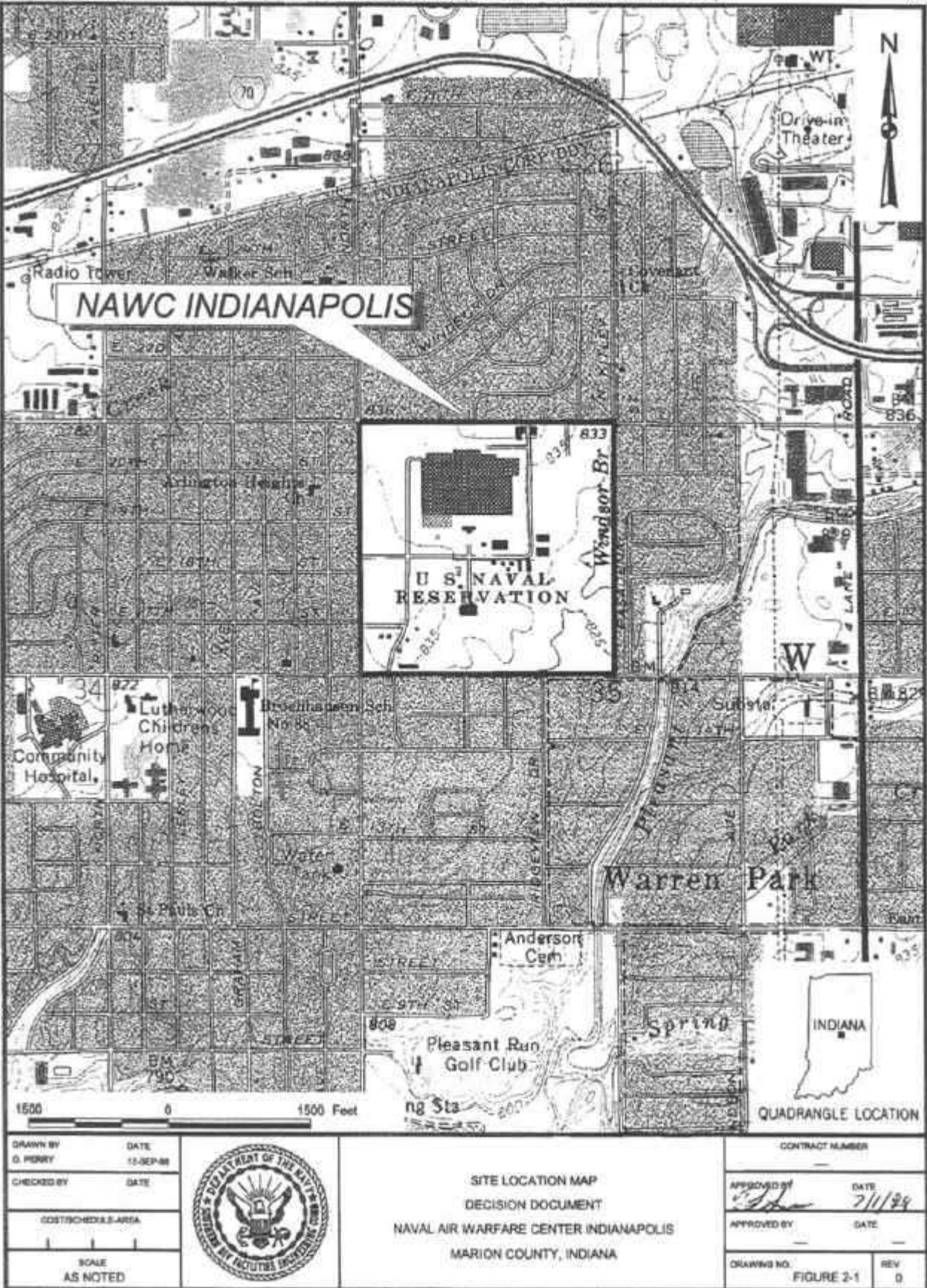
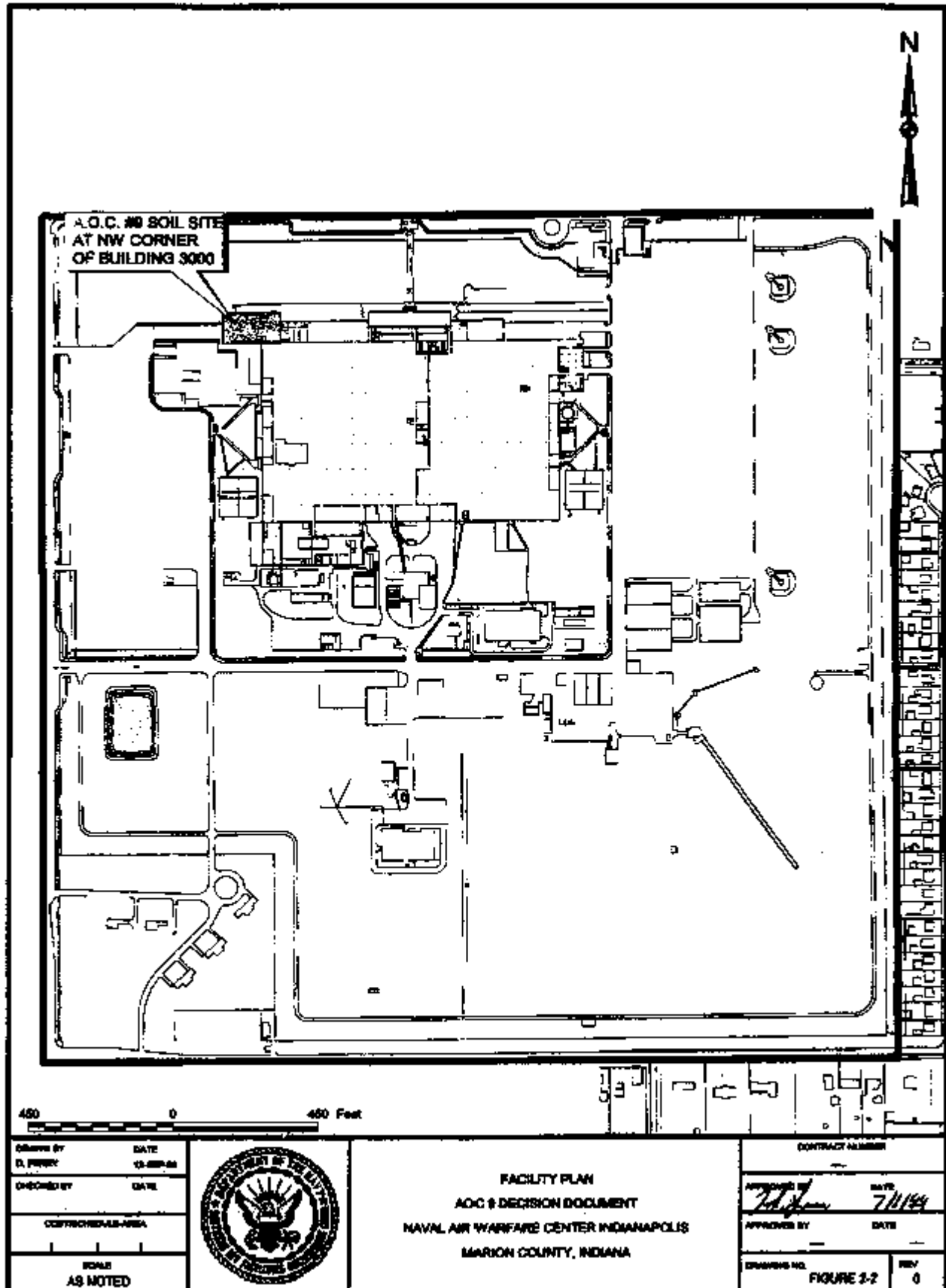


FIGURE 2-1: PROPOSED PLANS: 17-NOV-98: MAP LOCATION MAP LAYOUT

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P:\BMT\1720173_PROPOSED_FLAPPR 15-NOV-98 EMP AREAS OF CONCERN & LAYOUT

expected to be horizontally continuous throughout the entire NAWC. Each of these aquifer zones are separated by low permeable glacial till aquitards. The aquitard between the shallow and middle aquifers ranges in thickness between 15 to 19 feet and the aquitard between the middle and deep aquifer ranges between 23 and 41 feet thick.

The groundwater flow direction across the facility in the shallow and middle aquifer zones is generally to the southeast and south, while flow in the deep aquifer is southwest. It is likely that groundwater in the shallow aquifer discharges into Windsor Branch and Pleasant Run to the east and southeast of the facility. The average horizontal hydraulic gradient for the shallow aquifer was 0.0071 ft/ft on December 10, 1996 and 0.0116 ft/ft on September 27, 1997. The average horizontal hydraulic gradient is 0.014 ft/ft in the middle aquifer, and 0.005 ft/ft in the deep aquifer. The average vertical gradient between monitoring wells screened in the shallow and middle aquifer is 0.5 ft/ft downward in the north-central and southern edges of the NAWC. Between the shallow and middle aquifers, the average vertical gradient in the northeastern corner of the NAWC is 0.13 ft/ft upward. This upward gradient indicates potential recharge of Windsor Branch immediately east of the NAWC from the shallow aquifer. The average hydraulic gradient between the middle and the deep aquifer is 1.3 ft/ft. For additional information on the geology and hydrogeology at the NAWC Indianapolis please refer to B&R Environmental (1997) and USGS (1997, 1998).

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

During 1995, NAWC personnel determined that a fire line was leaking. During excavation for correction of the fire line leak, the contractor discovered a several inches thick layer which was originally thought to possibly be indicative of environmental contamination. Subsequent analysis of the material directly below the concrete flooring of an entranceway where the excavation took place indicated that the material was most likely asphalt, and that this would not be further pursued.

Additionally, a hydraulic trash compactor experienced a hydraulic oil leak. The leak occurred over paved areas, but runoff to adjacent grassy areas was evident. Visible staining was excavated and disposed off site. No confirmatory analysis at the limits of excavation was completed.

The NAWC Indianapolis, under the office of the Chief of Naval Operations (CNO) initiated an Environmental Compliance Evaluation (ECE) program to identify environmental compliance deficiencies, provide recommendations for corrective action, and establish a basis for future budgets. The first ECE was performed in October 1991. The next ECE was performed 1994, at which time a total of 21

environmental media/program areas were evaluated. The ECE's are maintained on site. Environmental programs and procedures were typically updated to meet ECE deficiencies.

In anticipation of the transfer from the government to the private sector, an Environmental Baseline Survey (EBS) was prepared by Brown & Root (B&R) Environmental (March 1996) to document the results of a modified Phase I environmental site assessment. The site assessment was performed in accordance with the U.S. Department of Defense (U.S. DOD) requirement for property intended to be sold, leased, transferred or acquired. The EBS reported findings on the status of the NAWC Indianapolis property and off-base property based on visual inspections and a review of records.

The Remedial Investigation began with the collection of Phase I environmental samples from October through December 1996. Additional samples were added in September 1997. A Phase I Remedial Investigation report was issued in December, 1997 which presented the analytical results and evaluated the potential human health risks associated with the NAWC facility. Based on these findings, additional Phase II samples were collected at selected areas during the spring and summer of 1998.

2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION

A Community Involvement Plan (CIP)(May 1997) was developed for NAWC Indianapolis that identifies a program to establish communication and information exchange between the Navy, and various federal, state and local agencies, and community agencies; and the public. Specifically, this provides a mechanism for the exchange of information between the BRAC Cleanup Team (BCT) and the public, primarily through the Restoration Advisory Board (RAB). The BCT and RAB periodically hold public meetings to provide full exchange of information and to provide an opportunity for public comment.

The Navy solicited input from the community for the Proposed Plan on the selected alternative for each response action. The Navy originally set a public comment period from September 28, 1998 to October 27, 1998, and later extended it until November 11, 1998, to encourage public participation in the selection process. The comment period included a public meeting at which the Navy, with the EPA and IDEM, presented the Proposed Plan, answered questions, and accepted both oral and written comments. The public meeting was held on October 14, 1998 from 7:00 PM to 9:00 PM at the Quality Inn East at 3525 North Shadeland Avenue in Indianapolis.

As indicated by the public notices, all documents pertinent to AOC 9 were made accessible to the public at the information repository located at the Warren Branch Library, 9701 East 21st Street, Indianapolis, Indiana.

2.4 SCOPE AND ROLE OF ACTION

The sites that required environmental investigations as part of the Remedial Investigation at NAWC Indianapolis comprised eighteen areas of concern and one Installation Restoration (IR) site. This Decision Document addresses the contamination of the soil associated with one AOC: AOC 9 - Northwest Corner of Building 3000. This AOC was determined in the RI to be a relatively low risk site within the NAWC Indianapolis facility. The objective of the action described in this Decision Document is to maintain this low level of risk by controlling the site for non-residential uses. The AOC is addressed independent of the other AOCs and the IR. The other AOCs will be addressed in other Decision Documents, and the basewide groundwater conditions will also be evaluated in a separate document.

2.5 SUMMARY OF SITE CHARACTERISTICS

2.5.1 Geology

The geology of AOC 9 consistent with the geology found across the NAWC facility. The 12 borings drilled at AOCs 8 and 9, ranged in depth from 6 to 10 feet bgs, only partially penetrated through the unconsolidated surficial fill and glacial deposits. In both AOC 8 and 9, yellow brown silty clay was found from 1 foot bgs down to approximately 10 feet bgs. Borings drill at AOC 9 encountered organic topsoil and clayey silt from ground surface down to 1.0 foot bgs.

2.5.2 Hydrogeology

No permanent monitoring wells were installed at AOC 9, thus hydraulic gradients, groundwater flow directions or velocity could not be determined at these sites. According to visual observations of the soil moisture content in subsurface soil samples, the water table was not encountered within any of the boreholes. Groundwater flow in the shallow aquifer is expected to mimic the basewide groundwater flow direction and the relatively flat surface topography and flow to the southeast. It is also believed that groundwater in the shallow aquifer will eventually discharge into Pleasant Run to the southeast.

2.5.3 Nature And Extent Of Contamination

This section presents the results of the sampling and analysis of environmental samples collected at AOC 9 (the Northwest Corner of Building 3000). Soil screening for VOC contamination, using a field GC unit, was used to define the limits of VOC contamination at AOC 9 and to target environmental samples for analysis by a fixed base laboratory. All data generated by the fixed-base laboratory were validated according to EPA National and Region V guidelines.

Surface and subsurface soil samples were collected from six direct push soil borings (AOC9-DP01-AOC9-DP06) advanced. The total VOC concentrations reported for several field screening samples exceed 100 µg/kg; however, total VOC concentrations reported as a result of the fixed-base lab analysis did not exceed 25 µg/kg and no positive PID readings were noted during the excavation of any of the direct push samples. Toluene ($C_{\max} = 2 \text{ µg/kg}$), trichloroethene ($C_{\max} = 4 \text{ µg/kg}$), chloromethane ($C_{\max} = 2 \text{ µg/kg}$), and methylene chloride ($C_{\max} = 20 \text{ µg/kg}$) were the only VOCs detected in the fixed-base lab samples. In contrast, positive detections exceeding those reported in the background dataset were reported for a variety of semivolatiles, including:

- 2,2'-Oxybis(1-chloropropane) (maximum concentration [C_{\max}] = 230 µg/kg)
- Acenaphthene ($C_{\max} = 56 \text{ µg/kg}$)
- Benzo(a)anthracene ($C_{\max} = 730 \text{ µg/kg}$)
- Benzo(a)pyrene ($C_{\max} = 470 \text{ µg/kg}$)
- Benzo(b)fluoranthene ($C_{\max} = 790 \text{ µg/kg}$)
- Benzo(g,h,i)perylene ($C_{\max} = 350 \text{ µg/kg}$)
- Benzo(k)fluoranthene ($C_{\max} = 750 \text{ µg/kg}$)
- Chrysene ($C_{\max} = 800 \text{ µg/kg}$)
- Fluoranthene ($C_{\max} = 1300 \text{ µg/kg}$)
- Indeno(1 2,3-cd)pyrene ($C_{\max} = 370 \text{ µg/kg}$)
- Phenanthrene ($C_{\max} = 820 \text{ µg/kg}$)
- Pyrene ($C_{\max} = 1300 \text{ µg/kg}$)

Analytes with concentrations exceeding the established benchmarks are benzo(a)pyrene (seven exceedances), benzo(b)fluoranthene (two exceedances), and benzo(a)anthracene (one exceedance). Benzo(a)pyrene was the only parameter exceeding a benchmark developed for the industrial land use scenario. With the exception of 2,2'-oxybis(1-chloropropane) (maximum concentration [C_{\max}] 230 µg/kg),

target analytes were not detected at concentrations exceeding groundwater protection benchmarks. Nearly all of the semi-volatile organics were detected at maximum concentrations in sample A09DP00301, collected at a depth of 0-1 foot bgs. This sample also produced the highest exceedances of benchmark values for benzo(a)pyrene, benzo(b)fluoranthene, and benzo(a)anthracene. The majority of all exceedances of background or benchmark values (30 of 36) were detected in soil at a depth of 1 foot or less. No exceedances were detected in soil over 6 feet deep. The observation of semivolatile organic contamination in shallow soil, centralized at a few locations, is consistent with a reported spill(s) of hydraulic oil in the area. PAH compounds are typical of the types of compounds detected at fuel/oil spill sites. Additionally, these samples were collected just off the edge of an asphalt or black top paved area.

In summary, although 6 surface and 12 subsurface soil samples were collected at AOC 9 and analyzed for lead, VOCs, and semivolatile organic compounds, PAHs were the only target analytes detected at concentrations exceeding the established benchmarks. PAH compounds are typical of the types of compounds detected at fuel/oil spill sites. The PAH contamination is concentrated in surface soils (less than 1 foot deep), which is consistent with a report of spilled hydraulic oil from a trash compactor. Benzo(a)pyrene was the only parameter detected at a maximum concentration exceeding a direct contact benchmark developed for the industrial land use scenario.

2.6 SUMMARY OF SITE RISKS

During the RI, an analysis was conducted to estimate the health or environmental problems that could result if the soil contamination at AOC 9 was not mitigated. This analysis is commonly referred to as a baseline risk assessment. In conducting this assessment, the focus was on health effects that could result from exposure to the soil and groundwater contaminants in both an industrial and a residential setting. The industrial setting considered the exposure by on-site workers, construction workers and adolescent trespassers. Residential exposure considered on-site exposure to the soil by future use of the site as residential property. At AOC 9, seventeen soil samples were collected from six borings at the AOC, and no groundwater samples were collected. In samples collected during the RI, contaminants were detected in the soils and in the groundwater beneath AOC 9.

The concentrations were compared to assessment criteria for residential and non-residential use. Criteria that were used to evaluate direct contact exposures were EPA Region III Risk Based Concentrations (RBCs), EPA Region IX Preliminary Remediation Goals (PRGs) IDEM Tier II Goals, and site-specific background concentrations. In addition, EPA Generic Soil Screening Levels (SSLs) and

IDEM Tier II Goals were used to evaluate the potential for a chemical to migrate from the soil to the groundwater. If a chemical concentration in soil was found to be greater than one of the criteria (or 10% of PRG or RBC in the case of non-carcinogens), then the chemical was designated as a Chemical Of Potential Concern (COPC) and was considered for further risk analysis. Concentrations of inorganic chemicals were also compared to site specific background concentrations.

Based on the laboratory analyses of the soil, COPCs based on direct contact exposure criteria included benzo(a)anthracene (730 µg/kg maximum), benzo(a)pyrene (470 µg/kg maximum), and benzo(b)fluoranthene (790 µg/kg maximum). Other compounds were present but were at concentrations below screening levels.

Cancer risks are 1.8×10^{-7} for construction workers exposed to the soil, 1.7×10^{-6} for typical workers exposed to the soil, and 2.3×10^{-7} for adolescent trespassers exposed to the soil. These values are within or below the target risk range of 10^{-4} to 10^{-6} . The hazard indices (HI) for all receptors are less than 1 indicating that no toxic effects are anticipated for these receptors.

The compound 2,2'-oxybis(1-chloropropane) was detected at a maximum concentration of 230 µg/kg. This concentration is less than the direct contact exposure criteria for residential and non-residential uses. However the concentration is greater than the IDEM Tier II clean-up goal criteria used to evaluate the potential of migration from soil to groundwater. This criteria assumes residential use, and since the future anticipated uses of the site are non-residential, the criteria is not applicable and the risk level was not evaluated further.

The available data suggested that the chemicals detected in the soil were not migrating off-site, therefore, risks based on off-site residential use of the groundwater were not evaluated. There are no on-site wells and the area is serviced by a public water supplier so risks by on-site consumers (present or future) were not evaluated.

The planned future use of the site is industrial, so the risks based on those uses were given more consideration than residential use. Alternatives for addressing the site were based on the continued industrial use of the site.

A baseline ecological risk assessment was also performed. The ecological risk assessment, compared soil sample analytical results to Ecological Screening Levels. Ecological Screening Levels are based on

EPA Region III Biological Technical Advisory Group (BTAG) values and "B level" criteria developed by The Netherlands and the Province of Quebec. If a chemical concentration in soil was found to be greater than one of the criteria, then the chemical was designated as a COPC and was considered for further risk analysis. COPCs were then used to evaluate the risk to wildlife receptors by calculating hazard quotients using a simple food chain model developed by the EPA Emergency Response Team. Finally, site specific factors were examined to evaluate the likelihood that a COPC may actually pose a risk. Such factors include the COPC concentration relative to the background, frequency and magnitude of detections, relationship of average COPC concentration to screening level, area affected, probable bioavailability, and degree in which wildlife are expected to use the area. In addition to contaminants in the surface soil, contaminants in the groundwater were modeled to predict their concentrations in Pleasant Run. The predicted concentrations were compared to surface water criteria. Contaminants with concentrations above the surface water criteria were as COPCs. Following the evaluation of the above information, COPCs that were judged likely to pose a potential risk under the site conditions were identified as chemicals of concern for further evaluation.

Based on the results of the surface soil analyses, only carbazole and di-n-butyl phthalate were identified as COPCs. These compounds were identified only because they lacked screening levels. The hazard quotients calculated by the model show that there is a potential risk to wildlife. The concentrations of the compounds were less than either the background values or the screening levels of similar compounds. AOC 9 is a paved area with ornamental scrubbery that provides little habitat. Thus, when the site-specific factors are considered, the ecological risks for the site are considered to be minimal. The COPCs were not considered to be chemicals of concern, and no further ecological evaluation was made.

The summary of the analytical results and risk assessment tables from the RI report are included in Appendix A. A figure depicting the sample locations is also provided in Appendix A.

2.7. SUMMARY OF ALTERNATIVES

The alternatives for AOC 9 are presented below. Note that the RI for NAWC Indianapolis has been completed, but the Feasibility Study has not been developed. These alternatives were being presented in the Proposed Plan (TtNUS, 1998). The alternatives that were considered are as follows:

- Alternative 1: No Action
- Alternative 2: Institutional Controls

2.7.1 Alternative 1: No Action

The “No Action” alternative is evaluated at every site to establish a baseline for comparison. Under this alternative, no further action would be taken to prevent exposure to the contamination in the soil.

There are no capital costs, operations and maintenance costs, and present worth costs associated with this alternative. There is no implementation time associated with this alternative.

2.7.2 Alternative 2: Institutional Controls

Institutional controls will be put in place to maintain the industrial use of the site. The alternative is consistent with the proposed use the property in the future. The institutional controls consists of deed restrictions that include:

- a clause restricting the land use to non-residential and specifically prohibiting uses such as, but not limited to, day care facilities and facilities for the elderly.
- a clause retaining the rights of access by the Navy, and Federal and State regulators for environmental investigations, inspections and/or remedial actions.

An Institutional Controls Plan (ICP) has been prepared to ensure the long term effectiveness of the institutional controls. The plan was developed according to EPA guidance. This plan includes a description of the areas controlled by the deed restrictions, description of site, identification of residual risk(s) presented, types of ICs imposed, proposed deed language implementing ICs, party responsible for monitoring the integrity and effectiveness of imposed control(s), procedures for reporting and enforcing against IC violations, assurances regarding completion of the CERCLA five-year review process, IC recordation / notice requirements, and commitment to pre-transfer meeting.

Since contamination will remain on site and a remedial action, institutional controls, is implemented, a five-year review of the remedy is required. No routine monitoring is proposed for AOC 9 since the groundwater data, as reported in the RI report and Phase II Technical Memorandum, shows that there

were no detections of contaminants above screening levels at sampling locations immediately downgradient of AOC 9.

There are no capital costs associated with this alternative although there will be some costs associated with routine administration and the five-year review (presented below). The implementation time to prepare and finalize the deed restriction language is estimated to be two months.

Note that this alternative does not employ any treatment or removal technologies. Human health and the environment is protected by this remedy without the need for further physical changes.

Total Five Year Costs⁽¹⁾

	Total hours	Labor Costs	Airfare/Lodging per diem/auto costs	AOC 9⁽²⁾ Costs
Routine Administration	10	\$350		
Parcel Transfer				
Trip 1	12	\$420	\$556	
Trip 2	12	\$420	\$556	
Five Year Review	12	\$420	\$556	
Problem Resolution				
Number 1	12	\$420		
Number 2	12	\$420		
Total		\$2,450	\$1,668	\$412

- 1 Total five year costs included costs associated with AOC 1, AOC 5, AOC 6, AOC 7, AOC 8, AOC 9, AOC 15, AOC 17, and AOC 18.
- 2 AOC 9 costs are based as a percentage (10%) of the total five year costs.

2.7.3 Other Alternatives

The current use of the facility and site is industrial. The intended future use of the site is industrial and the intended use of the facility is non-residential. Alternative 2 - Institutional Controls was evaluated and found to be protective of human health and the environment.

As required by the NCP, other alternatives were considered but were determined by the BCT to be not appropriate for the levels of contamination found at the AOC. Since Alternative 2 is protective of human

health and the environment, no other alternatives were evaluated in detail. Other alternatives are variations of soil remediation, such as excavation and disposal. These alternatives share several general characteristics. All require capital expenditure for field work and disposal. All require an implementation time of six to twelve months for design, bidding, procurement, and site work.

Any of these other alternatives can be expected to be evaluated favorably with the nine criteria. However, the resulting protection of human health and environment is the same as the institutional controls. The costs for implementation of treatment alternatives provide no additional benefit compared to the institutional controls. Thus, a detailed evaluation of treatment alternatives was not made and treatment alternatives were not considered further.

2.8 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

The preferred alternative for AOC 9 is Alternative 2 - Institutional Controls. Based on current information, this alternative would appear to provide the best balance of trade-offs among the alternatives with respect to nine criteria that EPA uses to evaluate alternatives. This section profiles the performance of the preferred alternative against the nine criteria, noting how it compares to the other alternatives under consideration. The nine criteria are summarized below.

Overall Protection of Human Health and Environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced or controlled through treatment, engineering controls or institutional controls.

Compliance with ARARs addresses whether or not a remedy will meet all of the Applicable or Relevant and Appropriate Requirements of other Federal and State environmental statutes and/or provide grounds for invoking a waiver.

Long-term effectiveness and performance refers to the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies that may be employed in a remedy.

Short-term effectiveness refers to the speed which the remedy achieves protection, as well as the remedy's potential to create adverse impacts on human health and the environment that may result during the construction and implementation period.

Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

Cost includes capital and operations and maintenance costs.

State Acceptance indicates whether, based on its review of the RI and Proposed Plan, the State concurs with, opposes, or has no comment on the preferred alternative.

Community Acceptance indicates whether interested persons in the community support, have reservations about, or oppose the preferred alternative.

2.8.1 Analysis

Overall Protection of Human Health and Environment. All of the alternatives, except for the “no action” alternative would provide adequate protection of human health and the environment by implementing institutional controls or by removing the contaminants. The preferred alternative would implement institutional controls to minimize contact with the contaminants.

Compliance with ARARs. The preferred alternative is in compliance with Federal and State ARARs.

Long-term effectiveness. The preferred alternative would be effective in the long run since the deed restrictions would be maintained through the implementation of an Institutional Controls Plan.

The “no action” alternative provides no long-term safeguards against exposure. Therefore, the alternative will not be considered further.

Reduction of toxicity, mobility, or volume through treatment. The preferred alternative offers no change in the toxicity, mobility or volume of contaminants.

Short-term effectiveness. The preferred alternative can be instituted in a relatively short time. There is no change in the situation while waiting for implementation.

Implementability. The preferred alternative has few administrative issues that will affect its implementation. Deed restrictions have been used in the past at other facilities.

Cost. The preferred alternative has no capital cost and no annual operations and maintenance costs. The costs associated with the five year review.

State Acceptance. The preferred alternative is in compliance with States ARARs. The State has viewed the preferred alternative favorably.

Community Acceptance. Community acceptance is described in Section 3.0 Responsiveness Summary.

2.9 SELECTED REMEDY

The selected remedy will provide a satisfactory level of risk relative to the current and future intended uses of the site. The level of risk is maintained but with little expenditure. The selected remedy is believed to provide the best balance in trade-offs among the alternatives with respect to the evaluation criteria. The selected remedy, however, does not result in unrestricted use of the site and five-year review of the site will be required.

Alternatives that employ treatment or removal were not considered practical since the risk associated with the site is consistent with the intended future uses of the facility.

2.10 STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practical for this site. However, because treatment of the principal threats of the site was not found to be practical, this remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. The size, location, and amount of contamination found at AOC 9 precludes a remedy in which contaminants would be treated effectively.

Because this remedy will result in the contamination remaining on-site, the Navy will conduct a review every five years after the commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

3.0 RESPONSIVENESS SUMMARY

A Proposed Plan for AOC 9 was issued in September 1998. Subsequent to this, the Navy solicited input from the community on the selected alternative. The Navy set a public comment period from September 28, 1998 to October 27, 1998, which was later extended to November 11, 1998, to encourage public participation in the selection process. The comment period included a public meeting at which the Navy, with the EPA and IDEM, presented the Proposed Plan, answered questions, and accepted both oral and written comments. The public meeting was held on October 14, 1998 from 7:00 PM to 9:00 PM at the Quality Inn East at 3525 North Shadeland Avenue in Indianapolis. As indicated by the public notice for the meeting, all documents pertinent to AOC 9 were made available to the public at the information repository located at the Western Branch Library, 9701 East 21st Street, Indianapolis, Indiana.

3.1 COMMUNITY PREFERENCES

Comments were received from one person. The comments concurred with the deed restrictions to limit the land use to industrial, and expressed concern for the land use to be changed to residential or permit day care facilities without extensive investigation. The comments were general and did not specify an AOC.

3.2 INTEGRATION OF COMMENTS

As these comments only concurred with the selected remedies identified, integration of the comments was not warranted.

3.3 COMMENT RESOLUTION

Please refer to the following pages for USEPA and IDEM comments and resolutions. Note that 'Draft' comments were addressed in working meetings, by teleconference or in revised documents. A formal written response was not provided for these comments.

**RECORD OF USEPA AND IDEM
COMMENTS AND RESOLUTIONS**



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We make Indiana a cleaner, healthier place to live

Frank O'Bannon
Governor

John M. Hamilton
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.ai.org/idem

November 17, 1998

Mr. Carl Loop
SOUTHDIV NAVFACENGCOM
2155 Eagle Drive
North Charleston, SC 29419-9010

Dear Mr. Loop:

Re: IDEM staff comments regarding the
Proposed Plans (PPs) for AOCs 1, 5, 6, 7, 8,
9, 15, 17, and 18

Staff of the Indiana Department of Environmental Management have reviewed the above referenced documents. Our review generated the following comments:

GENERAL COMMENTS:

Section 7.0 - Community Participation:

In paragraph 2, the third sentence should read: "The Proposed Plan meets the applicable or relevant and appropriate federal and state requirements." In addition, this section should explain how public comments will be addressed. Please verify if a copy of the administrative record is available at the Warren Branch Library. If this is not the case, delete the statement in the last paragraph of this section.

SPECIFIC COMMENTS:

AOC 5:

Section 2.2 - Site History:

The entire sanitary sewer line will be transferred. However, the sewer lines, and the land around the sewer lines (easement), is transferable if the sewer line is within the transfer parcel 1. Clarification in the text is needed.

Figure 2-2:

The hatched areas on the map represent the transferable soils around some parts of the sewer system. However, the legend on the figure does not reflect that. A statement explaining that fact is needed in the text of the PP.

Mr. Carl Loop
Page 2

AOC 7:

Section 2.2 - Site History:

The entire sanitary sewer line will be transferred. However, the sewer lines, and the land around the sewer lines (easement) is transferable if the sewer line is within the transfer parcel 1. Clarification in the text is needed.

Figure 2-2:

The hatched areas on the map represent the transferable soils around some parts of the sewer system. However, the legend on the figure does not reflect that. A statement explaining that fact is needed in the text of the PP.

CONCLUSION:

It is IDEM staffs understanding that Institutional Control Plans (ICPs) will be attached to the Proposed Plans/Decision Documents. Once these ICPs are approved by IDEM and the U.S. EPA, IDEM staff will issue concurrence with the subject Pps. If you have any questions regarding the above comments, please contact me at (317) 308-3133.

Sincerely,



Gabriele Hauer, Project Manager
Defense Environmental Restoration Program
Office of Environmental Response

GHH:mg

cc: Rex Osborn, DERP, IDEM
Denise Boone, U.S. EPA Region V
Mark Sladic, Tetra Tech NUS
Joe Logan, Tetra Tech NUS
Alan Shoultz, Navy-Southdiv.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF

SRF-5J

December 1, 1998

Carl Loop
Department of the Navy
SOUTHDIV NAVFACENGCOM
Code 18E2BM
2155 Eagle Drive
Post Office Box 190010
North Charleston, SC 29419-9010

RE: Proposed Plans for Areas of Concern 1, 5, 6, 7, 8, 9, 15, 17 and 18 for the Naval Air Warfare Center, Indianapolis, Indiana.

Dear Mr. Loop:

The United States Environmental Protection Agency (USEPA) has reviewed the Proposed Plans for Areas of Concern (AOCs) 1, 5, 6, 7, 8, 9, 15, 17 and 18 for the Naval Air Warfare Center (NAWC), Indianapolis, Indiana. The preferred alternatives that the Navy has chosen for each of the AOCs are acceptable. However, the Navy must realize that there are costs associated with institutional controls (ICs) that are deed restrictions. The Navy must include an estimate of the costs for ICs.

The USEPA will not concur until the following are complete: the community acceptance of the preferred alternative, the Institutional Control Plan(s), and the finalized decision documents.

If the Navy as the lead agency reevaluates their preferred alternative for the AOCs, changes a component of the preferred remedy, or chooses to implement a remedy other than the preferred alternative, any such changes must be made in accordance with CERCLA Section 117(b).

If you have any questions concerning this letter, please feel free to contact me at (312) 886-6217.

Sincerely,

A handwritten signature in cursive script that reads "Denise Boone".

Denise Boone
Remedial Project Manager

cc: Gabriele Hauer, IDEM



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PITT 03-9-043

March 5, 1999

Project Number 7173

Department of the Navy
SOUTHNAVFACENGCOM
ATTN: Carl Loop (Code 1871)
2155 Eagle Drive
North Charleston, South Carolina 29406

Reference: CLEAN Contract Number N62467-94-D-0888
Contract Task Order 0012

Subject: Decision Documents for AOC 1
Naval Air Warfare Center Indianapolis

Dear Mr. Loop:

In accordance with your request, please find enclosed three copies of the finalized Decision Document for AOC 1. The second part of the AOC 1 Decision Document submittal is the Institutional Control Manual and ICP for AOC 1. We believe the ICM is compliant with the most recent information provided by U.S. EPA. Upon regulatory concurrence, it is the Navy's intent to proceed as quickly as possible to complete the Decision Documents for the other AOCs in Parcel 1. These include AOCs 5, 6, 7, 8, 9, 15, 17, and 18.

Additionally, please see responses to IDEM comments. EPA said in a December 1, 1998 letter that they would not provide comments prior to community acceptance, completion of an ICP and finalized DD. The Navy feels these conditions have now all been met.

If you have any questions, feel free to call me at (412) 921-8216.

Sincerely,

Mark Sladic, P.E.
Task Order Manager

MS/gp

Enclosures

cc: Gabriele Hauer, IDEM
Denise Boone, USEPA
Alan Shoultz (w/o enclosures)
File 7173

**IDEM COMMENTS REGARDING PROPOSED
PLANS (PPs) FOR AOCs 1,5,6,7,8, 9, 15, 17, and 18**

GENERAL COMMENTS:

1. **COMMENT:** **Section 7.0 – Community Participation:** In paragraph 2, the third sentence should read: “The Proposed Plan meets the applicable or relevant and appropriate federal and state requirements.” In addition, this section should explain how public comments will be addressed. Please verify if a copy of the administrative record is available at the Warren Branch Library. If this is not the case, delete the statement in the last paragraph of this section.

RESPONSE

- a. The Navy agrees. This sentence in question some how got truncated and was missed. This will be corrected in the Decision Document.
- b. A paragraph stating how the public comments will be addressed is located at the top of page 7-2. This is compliant with the EPA ROD guidance. No changes to the text are necessary.
- c. A copy of the Administrative Record is located in the Warren Branch Library.

SPECIFIC COMMENTS:

AOC5:

1. **COMMENT:** **Section 2.2 – Site History:** The entire sanitary sewer line will be transferred. However, the sewer lines, and the land around the sewer lines (easement), is transferable if the sewer line is within the transfer parcel 1. Clarification in the text is needed.

RESPONSE: The Navy agrees. This paragraph will be re-written to clarify this issue in the Decision Document.

2. **COMMENT Figure 2.2.** The hatched areas on the map represent the transferable soils around some parts of the sewer system. However, the legend on the figure does not reflect that. A statement explaining that fact is needed in the text of the PP.

RESPONSE: The Navy agrees. A statement will be added to the text to explain the hatched areas on Figure 2-2. This change will be reflected in the Decision Document.

AOC 7:

1. **COMMENT:** **Section 2.2 – Site History:** The entire sanitary sewer line will be transferred. However, the sewer lines and the land around the sewer lines (easement) is transferable if the sewer line is within the transfer parcel 1. Clarification in the text is needed.

RESPONSE: The Navy Agrees. This paragraph will be re-written to clarify this issue in the Decision Document.

2. **COMMENT:** **Figure 2-2:** The hatched areas on the map represent the transferable soils around some parts of the sewer system. However, the legend on the figure does not reflect that. A statement explaining that fact is needed in the text of the PP.

RESPONSE: The Navy agrees. A statement will be added to the text to explain the hatched areas on Figure 2-2. This change will be reflected in the Decision Document.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF

SRF-5J

July 26, 1999

Carl Loop
Department of the Navy
SOUTHDIV NAVFACENGCOM
Code 18E2BM
2155 Eagle Drive
Post Office Box 190010
North Charleston, SC 29419-9010

RE: Decision Documents for Areas of Concern #5, 7, 9, 15, 17, and 18 for the Naval Air Warfare Center, Indianapolis, Indiana.

Dear Mr. Loop:

The United States Environmental Protection Agency (USEPA) has reviewed the Decision Documents (DDs) for Areas of Concern (AOCs):

- # 5 - Transferable Portion of North-South Sanitary Sewer
- # 7 - Transferable Portion of East-West Storm Sewer
- # 9 - Northwest Corner of Building 3000
- #15 - Building 1100
- #17 - Transferable Portion of Sentry Drive
- #18 - Northeast Land Scar Area

The DDs were received on July 7, 1999. The remedies that the Navy has selected are acceptable, however, the Navy has not provided the AOC-specific Institutional Control Plan (ICPs) as requested. In the USEPA's response to the proposed plans (dated December 1, 1998), it clearly stated that the USEPA could not concur until the following were completed: the community acceptance of the preferred alternative, the Institutional Control Plan(s), and the finalized decision documents. Two of the requirements have been satisfied.

Institutional controls must be clearly identified and defined, and their purpose and method of implementation should be clearly set forth in the decision document by way of the ICP as stated in the proposed plans. It is important to note that generally referring to or identifying an institutional control in a DD is not in itself an institutional control, because an institutional control must be implemented in order to achieve its objective, just as an engineering remedy described in a DD is

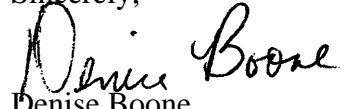
then designed and constructed. Additionally, the ICP must be included in the administrative record. The ICP Manual is not a substitute for the ICP, because the manual is only for the future property owner. The manual was developed so that the future property owner could have the ICPs in their possession without having to request access to the administrative record. The BRAC Closure Team agreed that all of abovementioned DDs were to follow the same format as the DD for AOC #1- Former Plating Area, Building 1000.

In Section 3.0 - Responsiveness Summary, please include a copy of the USEPA's and the Indiana Department of Environmental Management's (IDEM) comments on the proposed plan/DD and the Navy's responses to the comments in the next revision.

Please note that this is not a concurrence. The above deficiencies must be addressed before we can give a concurrence.

If you have any questions concerning this letter, please feel free to contact me at (312) 886-6217.

Sincerely,

A handwritten signature in black ink that reads "Denise Boone". The signature is written in a cursive, flowing style.

Denise Boone
Remedial Project Manager

cc: Sean Grady, IDEM
Alan Shoultz, SOUTHDIV
Mark Sladic, TtNUS

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PITT 07-9-201

July 27, 1999

Project Number 7173

Department of the Navy
SOUTHNAVFACENGCOM
ATTN: Carl Loop (Code 1871)
2155 Eagle Drive
North Charleston, South Carolina 29406

Reference: CLEAN Contract Number N62467-94-D-0888
Contract Task Order 0012

Subject: Decision Documents for Parcel 1
Naval Air Warfare Center Indianapolis

Dear Mr. Loop:

Please find enclosed three copies of change pages for the Parcel 1 AOCs.

1. **Instructions for the material attached to this letter:** At the recent BCT meeting, Sean pointed out that the Parcel 1 Decision Documents (DD) submitted on July 2 are lacking the site specific Institutional Control Plans. These DDs were to be revised in the same format as the signed AOC 1 DD. The AOC 1 DD has three appendices. The first is the local groundwater flow map. This map is not relevant for the other Parcel 1 DDs, and so is correctly excluded (since there is no groundwater remedy associated with these other AOCs). The second appendix for AOC 1 is the site-specific analytical summary, from the remedial investigation. The third appendix for AOC 1 is the site-specific Institutional Control Plan (ICP). It is this third appendix that has been inadvertently excluded. (However, the ICPs have been available in the Institutional Control Manual for Parcel 1 which accompanied the Parcel 1 DD volume).

Therefore, we are sending to the same distribution, which received the original DDs, a revised table of contents (TOC) identifying the appendix, plus the content of the missing appendix (the ICP). Please replace the TOC in each DD, and add the appendix contents to the end of each DD.

2. **Navy plan for packaging the appropriate DDs to support the initial parcel transfer:** Note that the parcel delineated for initial transfer is being identified as Parcel 1A, and contains only a subset of the AOCs included in the Parcel 1 documents. Upon regulatory concurrence and signature of the DDs included in the book titled '*Parcel 1 Decision Documents*', the DDs for the following AOCs will be copied from that book and collected in a separate volume titled '*Parcel 1A Decision Documents*'. These include:
 - AOC 5 – transferable portion of north-south sanitary sewer
 - AOC 7 – transferable portion of east-west storm sewer
 - AOC 17 – transferable portion of sentry drive
 - AOC 18 – northeast land scar area

Mr. Carl Loop
SOUTHNAVFACENGCOM
July 27, 1999 – Page Two

At the same time, the Institutional Control Manual for Parcel 1A will be prepared, using just the individual ICPs for the four AOCs identified above. These ICPs have already been submitted for regulatory review in the July 2 submittal of the '*Parcel 1 Institutional Control Manual*.'

If you have any questions, feel free to call me at (412) 921-8216.

Sincerely,

A handwritten signature in black ink, appearing to read 'Mark Sladic', with a stylized, cursive script.

Mark Sladic, P.E.
Task Order Manager

MS/kf

Enclosures

cc: Sean Grady, IDEM (w/enclosure)
Gary Schafer, USEPA (w/enclosure)
Alan Shoultz (w/o enclosures)
Mark Perry, TtNUS (w/enclosure)
Debra Wroblewski/DER, TtNUS (w/o enclosures)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF

SRF-5J

July 28, 1999

Carl Loop
Department of the Navy
SOUTHDIV NAVFACENGCOM
Code 18E2BM
2155 Eagle Drive
Post Office Box 190010
North Charleston, SC 29419-9010

RE: Decision Documents for Areas of Concern #5, 7, 9, 15, 17, and 18 for the Naval Air Warfare Center, Indianapolis, Indiana.

Dear Mr. Loop:

The United States Environmental Protection Agency (USEPA) has reviewed the Decision Documents (DDs) for Areas of Concern (AOCs):

- # 5 - Transferable Portion of North-South Sanitary Sewer
- # 7 - Transferable Portion of East-West Storm Sewer
- # 9 - Northwest Corner of Building 3000
- #15 - Building 1100
- #17 - Transferable Portion of Sentry Drive
- #18 - Northeast Land Scar Area

The revised pages were received on July 28, 1999. The USEPA concurs with remedies that the Navy has selected. However, in Section 3.0 - Responsiveness Summary, please include a copy of the USEPA's and the Indiana Department of Environmental Management's (IDEM) comments on the proposed plan/DD and the Navy's responses to the comments.

If you have any questions concerning this letter, please feel free to contact me at (312) 886-6217.

Sincerely,

A handwritten signature in cursive script, reading "Denise Boone", is positioned above the printed name.

Denise Boone
Remedial Project Manager

cc: Sean Grady, IDEM
Alan Shoultz, SOUTHDIV
Mark Sladic, TtNUS

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PITT 08-9-050

August 6, 1999

Project Number 7173

Department of the Navy
SOUTHNAVFACENGCOM
ATTN: Carl Loop (Code 1871)
2155 Eagle Drive
North Charleston, South Carolina 29406

Reference: CLEAN Contract Number N62467-94-D-0888
Contract Task Order 0012

Subject: Decision Documents for Parcel 1
Naval Air Warfare Center Indianapolis

Dear Mr. Loop:

Please find enclosed three copies of change pages for the Parcel 1 AOCs.

1. **Instructions for the material attached to this letter:** Pursuant to their letter dated July 28, regarding the Decision Documents for this site, the EPA has requested that a copy of the USEPA's and the Indiana Department of Environmental Management's. (IDEM) comments on the proposed plan/DD and the Navy's responses to the comments be included with these documents. Therefore, please replace the following pages:

- The updated table of contents (identifying Section 3.3 Comment Resolution), and,
- Page 3-1

Following Page 3-1, please insert the pages following the title page 'USEPA and IDEM Comments and Resolutions.' Note that the content of each group is identical, however the contents page and page 3-1 contain a header in the upper right corner which indicate which section the change pages should be inserted in.

As the remedy for AOC 6 and AOC 8 are 'no further action', these AOCs do not have change pages. This is consistent with EPA's July 28 letter.

2. **Schedule:** The Navy believes that the absence of these comment letters has not presented a material hurdle to completion of the regulatory review for these documents. The team schedule specified that following a 30-day regulatory review period, the date of concurrence on the Decision Documents was to be August 5. The Navy would appreciate if the EPA can now remove the signature pages from one set of the Decision Documents and sign these in the appropriate locations. Afterwards, please forward

Mr. Carl Loop
SOUTHNAVFACENGCOM
August 6, 1999 – Page Two

these to the IDEM for signature. Following IDEM signature, the Navy requests that IDEM please forward them to Southdiv, attention Carl Loop, for final signature. When Southdiv returns the signed pages to us, we will provide copies for inclusion in all outstanding sets of Decision Documents.

If you have any questions, feel free to call me at (412) 921-8216.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Sladic". The signature is fluid and cursive, with the first name "Mark" and last name "Sladic" clearly distinguishable.

Mark Sladic, P.E.
Task Order Manager

MS/kf

Enclosures

cc: Sean Grady, IDEW(w/enclosure)
Gary Schafer, USEPA (w/enclosure)
Alan Should (w/o enclosures)
Mark Perry, TtNUS (w/enclosure)
Debra Wroblewski/DER, TtNUS (w/o enclosures)



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August 17, 1999

Mr. Carl Loop
Department of the Navy
SOUTHDIV NAVFACENGCOM
Code 18E2BM
2155 Eagle Drive
Post Office Box 190010
North Charleston, SC 29419-9010

Dear Mr. Loop:

Re: Decision Document for Areas of Concern
#5, 6, 7, 8, 9, 15, 17, and 18 for the Naval
Air Warfare Center, Indianapolis, Indiana

Staff of the Indiana Department of Environmental Management (IDEM) have reviewed the above referenced document and has determined that it is acceptable providing the Navy address the following comments:

GENERAL COMMENT

An executive summary should be incorporated to give the readers an understanding of what this document is and why it was developed. Also, the title of this report should be changed to more accurately reflect the parcel name.

SPECIFIC COMMENTS

AOC 6, Page 2-13, Section 2.9: Some language in this section is not needed. Since there was no contamination, no risk, and no action is required for this AOC, the second sentence in the first paragraph continuing through the end of the page should be removed. Revision of this section may be needed.

AOC 8, Page 2-13, Section 2.9: Again, some language in this section is not needed. Since there was no contamination, no risk, and no action is required for this AOC, the third sentence in the first paragraph continuing through the end of the page should be removed. Revision of this section may be needed.

Mr. Carl Loop
Page 2

If you have any questions concerning this letter, please feel free to contact me at (317) 308-3121.

Sincerely,

A handwritten signature in black ink, appearing to read "Sean K. Grady". The signature is fluid and cursive, with the first name "Sean" and last name "Grady" clearly distinguishable.

Sean K. Grady, Project Manager
Federal Programs Section
Office of Environmental Response

SKG:mg

cc: Alan Shoultz, SOUTHDIV
Mark Sladic, Tetra Tech NUS
Denise Boone, U.S. EPA

REFERENCES

Agency for Toxic Substances and Disease Registry, 1990

B&R Environmental, March 1996, Environmental Baseline Survey - Naval Air Warfare Center Indianapolis, Indiana.

B&R Environmental, June 1996. Community Relations Plan - Naval Air Warfare Center Indianapolis, Indiana.

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B&R Environmental, October 1996. Remedial Investigation Work Plan - Naval Air Warfare Center Indianapolis, Indiana.

Supporting documents: Field Sampling Plan
Health and Safety Plan
Quality Assurance Project Plan

B&R Environmental, November 1996. DRAFT Data Management Plan - Naval Air Warfare Center Indianapolis, Indiana.

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IDEM (Indiana Department of Environmental Management), October 1995. Voluntary Remediation Program Resource Guide. Office of Environmental Response.

Tetra Tech NUS, Inc., August 7, 1998, Technical Memorandum of Phase II Remedial Investigation Analyses.

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U.S. EPA (United States Environmental Protection Agency), 1990. National Contingency Plan. Federal Register Vol. 55 No. 46 pp. 8666-8865.

U.S. Geological Survey, 1997, Hydrogeology and Ground-Water Flow in the Vicinity of the Naval Air Warfare Center, Indianapolis, Indiana., Risch, M. R. and R. F. Duweliuss, U.S. Department of the Interior, U.S. Geological Survey, Indianapolis, Indiana, Final Report.

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AOC 9

APPENDIX A

**REMEDIAL INVESTIGATION REPORT LABORATORY DATA, RISK ASSESSMENT
TABLES AND SAMPLE LOCATION FIGURE**

TABLE 9-12
SUMMARY OF POSITIVE DETECTIONS IN SURFACE AND SUBSURFACE SOIL
AOC 9 - THE NORTHWEST CORNER OF BUILDING 3000
NAVAL AIR WAREFARE CENTER INDIANAPOLIS
MARION COUNTY, INDIANA

SAMPLE NUMBER:	BACKGROUND	A09DP00101	A09DP00102	A09DP00103	A09DP00201	A09DP00202	A09DP00203	A09DP00301	A09DP00302	A09DP00303
SAMPLE DATE:		11/02/96	11/02/96	11/02/96	11/02/96	11/02/96	11/02/96	11/02/96	11/02/96	11/02/96
PHASE:		I	I	I	I	I	I	I	I	I
BORING:		AOC09DP01	AOC09DP01	AOC09DP01	AOC09DP02	AOC09DP02	AOC09DP02	AOC09DP03	AOC09DP03	AOC09DP03
AOC:		A09	A09	A09	A09	A09	A09	A09	A09	A09
DEPTH:		0 - 2	2 - 6	6 - 10	0 - 2	2 - 6	6 - 10	0 - 2	2 - 6	6 - 10
FIELD DUPLICATE OF:										
VOLATILES (ug/kg)										
CHLOROMETHANE		12 U	13 U	11 U	12 UJ	2 J	11 U	12 UJ	12 U	12 U
METHYLENE CHLORIDE		12 BU	20 B	11 BU	12 BU	12 BU	11 BU	12 BU	12 BU	12 BU
TOLUENE		12 U	13 U	11 U	12 UJ	12 U	11 U	12 UJ	12 UJ	12 U
TRICHLOROETHENE		1 J	13 U	11 U	12 UJ	12 U	11 U	12 UJ	4 J	12 U
SEMIVOLATILES (ug/kg)										
2,2'-OXYBIS(1-CHLOROPROPANE)		390 U	400 U	400 U	230 J	190 J	390 U	390 U	390 UJ	380 UJ
ACENAPHTHENE		390 U	400 U	400 U	370 U	440 U	390 U	56 J	390 U	380 U
ANTHRACENE		48 J	400 U	400 U	57 J	440 U	390 U	140 J	390 U	380 U
BENZO(A)ANTHRACENE		420	150 J	400 U	430	180 J	100 J	730	390 U	380 U
BENZO(A)PYRENE		310 J	100 J	400 U	340 J	120 J	55 J	470	390 U	380 U
BENZO(B)FLUORANTHENE		600	200 J	400 U	700	280 J	89 J	790	390 U	380 U
BENZO(G,H,I)PERYLENE		180 J	62 J	400 U	240 J	82 J	390 U	350 J	390 U	380 U
BENZO(K)FLUORANTHENE		310 J	110 J	400 U	750	300 J	390 U	350 J	390 U	380 U
CARBAZOLE		390 U	400 U	400 U	370 U	440 U	390 U	65 J	390 U	380 U
CHRYSENE		430	180 J	400 U	550	210 J	87 J	800	390 U	380 U
DI-N-BUTYL PHTHALATE		390 U	400 U	400 U	370 U	49 J	390 U	42 J	390 U	380 U
FLUORANTHENE		970	370 J	400 U	610	340 J	170 J	1300	390 U	380 U
FLUORENE		390 U	400 U	400 U	370 U	440 U	390 U	61 J	390 U	380 U
INDENO(1,2,3-CD)PYRENE		200 J	74 J	400 U	220 J	89 J	390 U	370 J	390 U	380 U
PHENANTHRENE		400	140 J	400 U	260 J	120 J	59 J	820	390 U	380 U
PYRENE		640	270 J	400 U	660	310 J	180 J	1300	390 U	380 U
METALS (mg/kg)										
LEAD	61.7									

Background value for inorganics are the 95% Upper Tolerance Limit (UTL) which is based on the background data set.

* - Indicates the concentration exceeds background.

Blank space indicates sample not analyzed for that particular compound.

TABLE 9-12
SUMMARY OF POSITIVE DETECTIONS IN SURFACE AND SUBSURFACE SOIL
AOC 9 - THE NORTHWEST CORNER OF BUILDING 3000
NAVAL AIR WAREFARE CENTER INDIANAPOLIS
MARION COUNTY, INDIANA

SAMPLE NUMBER:	BACKGROUND	A09DP00303-D	A09DP00401	A09DP00402	A09DP00403	A09DP00501	A09DP00502	A09DP00503	A09DP00601	A09DP00602
SAMPLE DATE:		11/02/96	11/02/96	11/02/96	11/02/96	11/02/96	11/02/96	11/02/96	11/02/96	11/02/96
PHASE:		I	I	I	I	I	I	I	I	I
BORING:		AOC09DP03	AOC09DP04	AOC09DP04	AOC09DP04	AOC09DP05	AOC09DP05	AOC09DP05	AOC09DP06	AOC09DP06
AOC:		A09	A09	A09	A09	A09	A09	A09	A09	A09
DEPTH:		6 - 10	0 - 2	2 - 6	6 - 10	0 - 2	2 - 6	6 - 10	0 - 2	2 - 6
FIELD DUPLICATE OF:		A09DP00303								
VOLATILES (µg/kg)										
CHLOROMETHANE		12 U	12 UJ	12 UJ	11 UJ	12 U	11 UJ	11 U	12 U	12 U
METHYLENE CHLORIDE		19 BU	12 U	12 U	11 U	12 BU	11 U	11 U	12 U	12 U
TOLUENE		12 U	2 J	1 J	11 UJ	12 U	11 UJ	11 U	12 UJ	12 UJ
TRICHLOROETHENE		12 U	4 J	12 U	1 J	12 U	11 UJ	11 U	12 UJ	12 U
SEMIVOLATILES (ug/kg)										
2,2'-OXYBIS(1-CHLOROPROPANE)		380 UJ	380 U	380 U	370 U	380 U	370 U	370 U	390 U	370 U
ACENAPHTHENE		380 U	380 U	380 U	370 U	380 U	370 U	370 U	390 U	370 U
ANTHRACENE		380 U	380 U	380 U	370 U	380 U	370 U	370 U	390 U	370 U
BENZO(A)ANTHRACENE		380 U	200 J	380 U	370 U	380 U	370 U	370 U	350 J	370 U
BENZO(A)PYRENE		380 U	130 J	380 U	370 U	380 U	370 U	370 U	180 J	370 U
BENZO(B)FLUORANTHENE		380 U	190 J	380 U	370 U	380 U	370 U	370 U	250 J	370 U
BENZO(G,H,I)PERYLENE		380 U	76 J	380 U	370 U	380 U	370 U	370 U	110 J	370 U
BENZO(K)FLUORANTHENE		380 U	170 J	380 U	370 U	380 U	370 U	370 U	300 J	370 U
CARBAZOLE		380 U	380 U	380 U	370 U	380 U	370 U	370 U	390 U	370 U
CHRYSENE		380 U	250 J	380 U	370 U	380 U	370 U	370 U	310 J	370 U
DI-N-BUTYL PHTHALATE		46 J	380 U	380 U	370 U	380 U	370 U	370 U	390 U	370 U
FLUORANTHENE		380 U	400	380 U	370 U	380 U	370 U	370 U	620	370 U
FLUORENE		380 U	380 U	380 U	370 U	380 U	370 U	370 U	390 U	370 U
INDENO(1,2,3-CD)PYRENE		380 U	86 J	380 U	370 U	380 U	370 U	370 U	120 J	370 U
PHENANTHRENE		380 U	150 J	380 U	370 U	380 U	370 U	370 U	240 J	370 U
PYRENE		380 U	450	380 U	370 U	380 U	370 U	370 U	690	370 U
METALS (mg/kg)										
LEAD	61.7		11.6 J	6.6 J		9.7 J				

Background value for inorganics are the 95% Upper Tolerance Limit (UTL) which is based on the background data set.

* - Indicates the concentration exceeds background.

Blank space indicates sample not analyzed for that particular compound.

TABLE 9-12
SUMMARY OF POSITIVE DETECTIONS IN SURFACE AND SUBSURFACE SOIL
AOC 9 - THE NORTHWEST CORNER OF BUILDING 3000
NAVAL AIR WAREFARE CENTER INDIANAPOLIS
MARION COUNTY, INDIANA

SAMPLE NUMBER:	BACKGROUND	A09DP00603	A09DP00603-D							
SAMPLE DATE:		11/02/96	11/02/96							
PHASE:		I	I							
BORING:		AOC09DP06	AOC09DP06							
AOC:		A09	A09							
DEPTH:		6 - 10	6 - 10							
FIELD DUPLICATE OF:			A09DP00603							
VOLATILES (µg/kg)										
CHLOROMETHANE		11 UJ	12 UJ							
METHYLENE CHLORIDE		11 U	12 U							
TOLUENE		11 UJ	12 UJ							
TRICHLOROETHENE		11 UJ	2 J							
SEMIVOLATILES (ug/kg)										
2,2'-OXYBIS(1-CHLOROPROPANE)		380 U	380 U							
ACENAPHTHENE		380 U	380 U							
ANTHRACENE		380 U	380 U							
BENZO(A)ANTHRACENE		380 U	380 U							
BENZO(A)PYRENE		380 U	380 U							
BENZO(B)FLUORANTHENE		380 U	380 U							
BENZO(G,H,I)PERYLENE		380 U	380 U							
BENZO(K)FLUORANTHENE		380 U	380 U							
CARBAZOLE		380 U	380 U							
CHRYSENE		380 U	380 U							
DI-N-BUTYL PHTHALATE		380 U	380 U							
FLUORANTHENE		380 U	380 U							
FLUORENE		380 U	380 U							
INDENO(1,2,3-CD)PYRENE		380 U	380 U							
PHENANTHRENE		380 U	380 U							
PYRENE		380 U	380 U							
METALS (mg/kg)										
LEAD	61.7									

Background value for inorganics are the 95% Upper Tolerance Limit (UTL) which is based on the background data set.

* - Indicates the concentration exceeds background.

Blank space indicates sample not analyzed for that particular compound.

Data validation was conducted in accordance with the EPA National Functional Guidelines for Organic and Inorganic Data Review and EPA Region V guidelines. The following data qualifiers were used during the data review process:

- U - Indicates that the analyte was not detected at the numerical detection limit. Nondetected results reported by the laboratory and positive results qualified due to laboratory or field blank contamination (false positives) are reported using this qualifier.
- BU - Indicates that the analyte was detected in the associated method blank but the result is considered to be a false positive as a result of method blank contamination.
- BJ - Indicates that the analyte was detected in the associated laboratory method blank. The stated result is qualified as estimated since the concentration exceeds the validation blank action level.
- UJ - Indicates that the analyte was not detected. However, the detection limit is estimated as a result of a noncompliance encountered during laboratory analysis. The associated detection limit is regarded as imprecise.
- J - Indicates that the analyte was detected and the associated numerical result is estimated or imprecise.
- UR - Indicates that the laboratory did not detect the analyte. However, the nondetected analyte is considered unreliable and unusable as a result of a gross technical deficiency.
- R - Indicates that the laboratory detected the analyte. However, the positive result is considered unreliable and unusable as a result of a gross technical deficiency.

The above qualifications are generally categorized as major and minor problems or deficiencies. Major problems are defined as those, which result in the rejection of a data. Such results are qualified either as R or UR. Minor problems are defined as those, which result in the estimation of a given data point. The following qualifiers identify data qualified as a consequence of minor problems: BU, BJ, UJ, and J.

TABLE 9-14

SELECTION OF COPCs FOR HUMAN HEALTH RISK ASSESSMENT
DIRECT CONTACT EXPOSURE - RESIDENTIAL LAND USE SCENARIO
AOC 9 - THE NORTHWEST CORNER OF BUILDING 3000 - SURFACE SOIL
PHASE I & II REMEDIAL INVESTIGATION
NAVAL AIR WARFARE CENTER INDIANAPOLIS
MARION COUNTY, INDIANA

Chemical	Frequency of Detection (2)	Range of Detection	Exposure Point Concentration	Average Concentration Positive NUTs	Location of Maximum	EPA Region III Risk-based Concentrations (2) Residential	EPA Region IX Preliminary Risk-based Goals (3) Residential	Indiana Tier II Cleanup Goals (4) Residential	Soil Screening Level (5) Soil to Air	Upper Tolerance Limit for Background	Selected as a COPC? Residential Yes or No	Rationale for Contaminant Selection (6)
Volatile Organic Compounds (ug/kg)												
Toluene	18	3	2	2	AOC09DP04	180000	520000 (sat)	1000000	525500	ND	No	BSL
Trichloroethene	28	1-4	4	2.5	AOC09DP04	58050	2700	58180	3000	ND	No	BSL
Semi-volatile Organic Compounds (ug/kg)												
2,3-Dichloro-1-chloropropane	18	230	220	230	AOC09DP02	8150	2500	8140	—	ND	No	BSL
Aroclor 1248	18	58	50	55	AOC09DP04	470000	28000	10000000	120000	ND	No	BSL
Acetophenone	58	28-140	140	81.7	AOC09DP03	2300000	1400000	10000000	8800	ND	No	BSL
Benzonitrile	58	200-750	750	426	AOC09DP03	670	—	680	27000	ND	No	ASL
Benzophenone	58	130-470	470	285	AOC09DP03	—	—	680	11000	ND	No	ASL
Benzo(a)anthracene	58	180-780	678	825	AOC09DP03	670	—	680	25000	ND	No	ASL
Benzo(a)pyrene	58	78-380	350	181	AOC09DP03	340000 (7)	8800 (7)	—	—	ND	No	BSL
Benzo(b)fluoranthene	58	170-780	674	375	AOC09DP02	8700	8800	8770	—	ND	No	BSL
Carbazole	18	69	65	65	AOC09DP03	22000	22000	—	11000	ND	No	BSL
Chrysene	58	250-800	800	498	AOC09DP03	27000	88000	87870	3800	ND	No	BSL
Di-n-butyl phthalate	18	42	42	42	AOC09DP03	780000	250000	2408000	100000	ND	No	BSL
Fluoranthene	58	450-1300	1010	780	AOC09DP03	210000	200000	2163000	88000	ND	No	BSL
Fluorene	18	61	61	61	AOC09DP03	340000	180000	1800000	28000	ND	No	BSL
Indeno(1,2,3-cd)pyrene	58	88-570	370	189	AOC09DP03	670	880	880	280000	ND	No	BSL
Phenanthrene	58	165-820	788	374	AOC09DP03	340000 (7)	8800 (7)	—	—	ND	No	BSL
Pyrene	58	450-1300	1300	748	AOC09DP03	280000	180000	1800000	38000	ND	No	BSL
Metals (ug/kg)												
Lead	272	9.7-11.8	11.8	10.7	AOC09DP04	400 (8)	400	—	—	11.7	No	BSL, BKG

Notes:

(1) - Data from the following sampling locations were included in the screening process: A09DP00101, A09DP00201, A09DP00301, A09DP00401, A09DP00501, A09DP00601

(2) - U.S. EPA Region III Risk-based Concentration Table, April 12, 1999.

(3) - U.S. EPA Region IX Preliminary Remedial Goals, May 1, 1998.

(4) - IDEM Voluntary Remediation Program Resource Guide, October, 1995.

(5) - U.S. EPA Soil Screening Guidance, May 1996.

(6) - Rationale Codes Above Screening Levels (ASL)

Background Levels (BKG)

Essential Nutrient (NUT)

Below Screening Level (BSL)

(7) - Value is for naphthalene.

(8) - OSWER screening level.

One-tenth the EPA Region III RBCs and EPA Region IX PRGs are presented for noncarcinogenic compounds.

Shaded bolded values indicate an exceedance of background and / or criteria.

ND - Not Detected

COPC - Chemicals of Potential Concern.

sat - Soil saturation limit.

TABLE 9-15

SELECTION OF COPCs FOR HUMAN HEALTH RISK ASSESSMENT
DIRECT CONTACT EXPOSURE - NON RESIDENTIAL LAND USE SCENARIO
AOC 9 - THE NORTHWEST CORNER OF BUILDING 3000 - SURFACE SOIL
PHASE I & II REMEDIAL INVESTIGATION
NAVAL AIR WARFARE CENTER INDIANAPOLIS
MARION COUNTY, INDIANA

Chemical	Frequency of Detection (%)	Range of Detection	Exposure Point Concentration	Average Concentration Positive (ppm)	Location of Monitoring	EPA Region III Risk-Based Concentration (C) Non Residential	EPA Region IX Preliminary Risk-Based Goals (C) Non Residential	Indiana Tier II Cleanup Goals (C) Non Residential	Soil Screening Level (C) Spill to Air	Upper Tolerance Limit to Background	Selected as a COPC? Non Residential	Reference for Contaminant Definition or Selection (C)
Metals Organic Compounds (ppm)												
Chlorobenzene	10	3	3	3	A09DP004	2400000	25000 sat	180000	25000	ND	No	001
1,1-Dichloroethane	30	1 - 4	4	2.5	A09DP004	30000	3000	3400	5000	ND	No	001
Metals Inorganic Compounds (ppm)												
Boron	10	250	250	250	A09DP002	6000	6000	6000	—	ND	No	001
Chromium	10	80	80	80	A09DP002	1200000	200000	1000000	120000	ND	No	001
Copper	10	20 - 140	140	81.7	A09DP002	6400000	2300000	2000000	9000	ND	No	001
Manganese	10	200 - 250	250	226	A09DP001	7000	3000	7000	27000	ND	No	001
Mercury	30	100 - 400	400	280	A09DP002	700	700	700	10000	ND	No	001
Nickel	30	700 - 700	870	800	A09DP002	7000	3000	7000	23000	ND	No	001
Vanadium	30	70 - 200	200	151	A09DP002	620000 (7)	10000 (7)	—	—	ND	No	001
Barium	30	170 - 700	874	326	A09DP002	70000	30000	70000	—	ND	No	001
Cadmium	10	20	20	20	A09DP002	20000	15000	—	15000	ND	No	001
Chromium	30	200 - 200	200	200	A09DP001	70000	20000	70000	2000	ND	No	001
Lead	10	40	40	40	A09DP002	2000000	1100000	2000000	20000	ND	No	001
Selenium	30	400 - 1000	1000	760	A09DP002	600000	270000	600000	40000	ND	No	001
Zinc	10	50	50	50	A09DP002	200000	200000	200000	50000	ND	No	001
Aluminum	30	20 - 350	370	180	A09DP001	700	3000 (7)	7000	200000	ND	No	001
Antimony	30	100 - 100	700	570	A09DP002	600000 (7)	10000 (7)	—	—	ND	No	001
Asbestos	10	100 - 7000	1300	700	A09DP001	7000000	2000000	1000000	20000	ND	No	001
Metals Inorganic (ppm)												
As	30	0.3 - 11.5	11.5	10.7	A09DP001	—	2000	—	—	0.7	No	001, 002

Notes:

(1) - Data from the following sampling locations were included in the screening process: A09DP00101, A09DP00201, A09DP00301, A09DP00401, A09DP00501, A09DP00601

(2) - U.S. EPA Region III Risk-based Concentration Table, April 12, 1999.

(3) - U.S. EPA Region IX Preliminary Remedial Goals, May 1, 1998.

(4) - IDEM Voluntary Remediation Program Resource Guide, October, 1995.

(5) - U.S. EPA Soil Screening Guidance, May 1996.

(6) - Rationale Codes
Above Screening Levels (ASL)
Background Levels (BKG)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(7) - Value is for naphthalene.

One-tenth the EPA Region III RBCs and EPA Region IX PRGs are presented for noncarcinogenic compounds.

Shaded bolded values indicate an exceedance of background and / or criteria.

ND - Not Detected

COPC - Chemicals of Potential Concern.

sat - Soil saturation limit.

TABLE 9-16

SELECTION OF COPCs FOR HUMAN HEALTH RISK ASSESSMENT
DIRECT CONTACT EXPOSURE - RESIDENTIAL LAND USE SCENARIO
AOC 9 - THE NORTHWEST CORNER OF BUILDING 3000 - SUBSURFACE SOIL
PHASE I & II REMEDIAL INVESTIGATION
NAVAL AIR WARFARE CENTER INDIANAPOLIS
MARION COUNTY, INDIANA

Chemical	Frequency of Detection (1)	Range of Detection	Exposure Point Concentration	Average Concentration Positive Hits	Location of Maximum	EPA Region III Risk-Based Concentrations (2) Residential	EPA Region IX Preliminary Risk-Based Goals (3) Residential	Indiana Tier II Cleanup Goals (4) Residential	Soil Screening Level (5) Soil to Air	Upper Tolerance Limit for Background	Selected as a COPC? Residential Yes or No	Rationale for Contaminant Detection or Selection (6)
Volatile Organic Compounds (ug/kg)												
Chloroethane	1/12	2	2	2	A0C09DP02	48000	1200	---	63	ND	No	BSL
Methylene chloride	1/12	20	8.97	20	A0C09DP01	85000	8500	---	7000	ND	No	BSL
Toluene	1/12	1	1	1	A0C09DP04	1800000	520000 (sat)	1000000	520000	ND	No	BSL
Trichloroethene	3/12	1 - 4	4	2.38	A0C09DP03	66800	2700	437110	3000	ND	No	BSL
Semi-volatile Organic Compounds (ug/kg)												
2,2-Dichloro(1-chloropropane)	1/12	190	190	190	A0C09DP02	9100	2800	1472230	---	ND	No	BSL
Benzonitrile	3/12	100 - 180	180	143	A0C09DP02	878	950	888630	27000	ND	No	BSL
1,1-Dichloroethene	3/12	88 - 120	120	81.7	A0C09DP02	---	---	888630	11000	ND	No	BSL
Benzophenanthrene	3/12	88 - 280	221	180	A0C09DP02	870	960	888630	23000	ND	No	BSL
Benzofluoranthene	3/12	82 - 82	82	72	A0C09DP02	310000 (7)	8500 (7)	---	---	ND	No	BSL
Benzogluconthene	2/12	119 - 240	218	208	A0C09DP03	8780	8500	8886300	---	ND	No	BSL
Chrysene	3/12	87 - 210	208	180	A0C09DP02	67080	58000	10000000	3800	ND	No	BSL
Dibenzofluoranthene	3/12	48 - 48	48	47.6	A0C09DP03	78088	85000	10000000	100000	ND	No	BSL
Fluoranthene	3/12	170 - 370	248	203	A0C09DP01	510000	200000	10000000	80000	ND	No	BSL
Indeno(1,2,3-cd)pyrene	3/12	74 - 88	88	81.5	A0C09DP02	878	960	888630	280000	ND	No	BSL
Phenanthrene	3/12	88 - 140	140	108	A0C09DP01	310000 (7)	5500 (7)	---	---	ND	No	BSL
Pyrene	3/12	180 - 310	228	253	A0C09DP02	230000	180000	10000000	58000	ND	No	BSL
Metals (ug/kg)												
Lead	1/1	8.6	8.8	8.6	A0C09DP04	---	400	---	---	61.7	No	BSL, BGL

Notes:

(1) - Data from the following sampling locations were included in the sampling process: A09DP00102, A09DP00103, A09DP00202, A09DP00203, A09DP00302, A09DP00303-MAX, A09DP00402, A09DP00403, A09DP00502, A09DP00503, A09DP00602, A09DP00603-MAX

(2) - U.S. EPA Region III Risk-based Concentration Table, April 12, 1999.

(3) - U.S. EPA Region IX Preliminary Remedial Goals, May 1, 1998.

(4) - IDEM Voluntary Remediation Program Resource Guide, October, 1995.

(5) - U.S. EPA Soil Screening Guidance, May 1996.

(6) - Rationale Codes
Above Screening Levels (ASL)
Background Levels (BKG)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(7) - Value is for naphthalene.

(8) - OSWER screening level.

One-tenth the EPA Region III RBCs and EPA Region IX PRGs are presented for noncarcinogenic compounds.

Shaded bold values indicate an exceedance of background and / or criteria.

ND - Not Detected

COPC - Chemicals of Potential Concern.

sat - Soil saturation limit.

TABLE 9-17

SELECTION OF COPCs FOR HUMAN HEALTH RISK ASSESSMENT
DIRECT CONTACT EXPOSURE - NON RESIDENTIAL LAND USE SCENARIO
AOC 9 - THE NORTHWEST CORNER OF BUILDING 3000 - SUBSURFACE SOIL
PHASE I & II REMEDIAL INVESTIGATION
NAVAL AIR WARFARE CENTER INDIANAPOLIS
MARION COUNTY, INDIANA

Chemical	Frequency of Detection (1)	Range of Detection	Exposure Point Concentration	Average Concentration Positive Hits	Location of Maximum	EPA Region III Risk-Based Concentration (2) Non Residential	EPA Region IX Preliminary Risk-Based Goals (3) Non Residential	Indiana Tier II Cleanup Goals (4) Non Residential	Soil Screening Level (5) Soil to Air	Upper Tolerance Limit for Background	Selected as a COPC? Non Residential Yes or No
Volatiles Organic Compounds (vdg)											
Chloroethane	1/12	2	2	2	A09DP00102	440000	2800	—	83	ND	No
Dichloroethane	1/12	20	8.57	20	A09DP00101	760000	20000	—	7000	ND	No
Ethylene	1/12	1	1	1	A09DP00104	41000000	500000 (vdg)	1000000	550000	ND	No
Trichloroethane	3/12	1-4	4	2.33	A09DP00103	580000	3400	437110	3000	ND	No
Semi-volatile Organic Compounds (vdg)											
2,3-Dichlorobutadiene	1/12	180	180	180	A09DP00102	62500	3700	1472230	—	ND	No
Dibenzodioxane	3/12	100-180	180	141	A09DP00102	7100	3400	68800	27000	ND	No
Dibenzofuran	3/12	88-120	120	81.7	A09DP00102	780	380	68800	11000	ND	No
Dibenzothiophene	3/12	88-200	221	180	A09DP00102	7800	3400	68800	23000	ND	No
Dibenzofuran	3/12	88-82	82	72	A09DP00102	6200000 (7)	18000 (7)	—	—	ND	No
Dibenzothiophene	2/12	180-300	248	208	A09DP00102	78000	38000	400000	—	ND	No
Dibenzofuran	3/12	87-210	208	180	A09DP00102	780000	380000	3800000	3800	ND	No
Dibenzothiophene	3/12	48-48	48	47.5	A09DP00101	20000000	11000000	10000000	100000	ND	No
Dibenzofuran	3/12	170-370	248	280	A09DP00101	4000000	3000000	10000000	68000	ND	No
Dibenzothiophene	3/12	74-88	88	81.3	A09DP00102	7800	3800	68800	28000	ND	No
Dibenzofuran	3/12	88-140	140	108	A09DP00101	6500000	18000 (7)	—	—	ND	No
Dibenzothiophene	3/12	180-340	228	253	A09DP00102	8100000	3800000	18000000	38000	ND	No
Metals (vdg)											
Lead	1/1	8.6	8.6	8.6	A09DP00104	—	1000	—	—	81.7	No

NOTES:

- (1) - Data from the following sampling locations were included in the sampling process: A09DP00102, A09DP00103, A09DP00202, A09DP00203, A09DP00302, A09DP00303-MAX, A09DP00402, A09DP00403, A09DP00502, A09DP00503, A09DP00602, A09DP00603-MAX
- (2) - U.S. EPA Region III Risk-based Concentration Table April 12, 1999.
- (3) - U.S. EPA Region IX Preliminary Remedial Goals, May 1, 1998.
- (4) - IDEM Voluntary Remediation Program Resource Guide, October, 1995.
- (5) - U.S. EPA Soil Screening Guidance, May 1996.
- (6) - Rationale Codes
Above Screening Levels (ASL)
Background Levels (BKG)

TABLE 9-18

SELECTION OF CHEMICALS OF POTENTIAL CONCERN (COPCs) FOR HUMAN HEALTH RISK ASSESSMENT
GROUNDWATER PROTECTION EVALUATION
AOC 9 - THE NORTHWEST CORNER OF BUILDING 3000 - SURFACE AND SUBSURFACE SOIL
PHASE I & II REMEDIAL INVESTIGATION
NAVAL AIR WARFARE CENTER INDIANAPOLIS
MARION COUNTY, INDIANA

Chemical	Maximum Concentration (1)		Indiana Tier II Cleanup Goals (2)		EPA Region IX Soil Screening Level (3)	Upper Tolerance Limit for Background	Selected as a COPC?	
	Surface Soil	Subsurface Soil	Non Residential		Soil to Groundwater		Industrial	Residential
			Yes or No	Yes or No			Yes or No	Yes or No
Volatile Organic Compounds (ug/kg)								
Chloromethane	ND	2	—	—	—	ND	NC	NC
Methylene Chloride	ND	20	—	—	20	ND	No	No
Toluene	2	1	1000000	202160	12000	ND	No	No
Trichloroethene	4	4	25730	76	60	ND	No	No
Semivolatile Organic Compounds (ug/kg)								
3,4-Dichlorobenzene	230	180	1320	300	—	ND	No	No
Acenaphthene	56	ND	10000000	10000000	970000	ND	No	No
Anthracene	140	ND	10000000	10000000	12000000	ND	No	No
Benzo(a)anthracene	730	160	103680	103681	2000	ND	No	No
Benzo(a)pyrene	470	120	212670	212663	8000	ND	No	No
Benzo(b)fluoranthene	790	260	354960	354977	5090	ND	No	No
Benzo(g,h,i)perylene	360	82	—	—	—	ND	NC	NC
Benzo(k)fluoranthene	750	300	3759120	601638	49000	ND	No	No
Carbazole	66	ND	—	—	600	ND	No	No
Chrysene	800	210	10000000	379273	160000	ND	No	No
Di-n-butyl Phthalate	42	49	6186560	1054867	2300000	ND	No	No
Fluoranthene	1300	370	10000000	2306040	4300000	ND	No	No
Fluorene	61	ND	10000000	6436641	600000	ND	No	No
Indeno(1,2,3-cd)pyrene	370	69	629170	629163	14000	ND	No	No
Phenanthrene	620	140	—	—	—	ND	NC	NC
Pyrene	1900	310	10000000	10000000	4200000	ND	No	No
Metals (mg/kg)								
Lead	11.6	6.6	—	—	—	61.7	NC	NC

NOTES:

(1) - Data from the following sampling locations were included in the sampling process: A09DP00102, A09DP00103, A09DP00202, A09DP00203, A09DP00302, A09DP00303-MAX, A09DP00402, A09DP00403, A09DP00502, A09DP00503, A09DP00602, A09DP00603-MAX

(2) - IDEM Voluntary Remediation Program Resource Guide, October, 1995.

(3) - U.S. EPA Region IX Preliminary Remedial Goals, May 1, 1998.

Shaded bolded values indicate an exceedance of criteria.

ND - Not Detected

COPC - Chemicals of Potential Concern.

NC - No criteria available.

TABLE 9-19
CHEMICALS RETAINED AS COPCS FOR AOC 9
NAVAL AIR WARFARE CENTER
PHASE I & II REMEDIAL INVESTIGATION
NAVAL AIR WARFARE CENTER INDIANAPOLIS

Chemical	Surface Soil		Subsurface Soil		Soil to Air		Soil to Groundwater	
	Residential	Non-Residential	Residential	Non-Residential	Surface Soil	Subsurface Soil	Residential	Non-Residential
Semivolatile Organic Compounds								
2,2'-Oxybis(1-chloropropane)							X	
Benzo(a)anthracene	X							
Benzo(a)pyrene	X	X	X					
Benzo(b)fluoranthene	X							

Notes:

An X indicates that the maximum detected concentration exceeded the screening criteria.

TABLE 9-20

**CHEMICALS OF CONCERN AND EXPOSURE CONCENTRATIONS
AOC 9 - THE NORTHWEST CORNER OF BUILDING 3000
PHASE I AND II REMEDIAL INVESTIGATION
NAVAL AIR WARFARE CENTER INDIANAPOLIS
MARION COUNTY, INDIANA**

Chemical of Concern	Exposure Concentration				
	Surface Soil ¹ Concentration (mg/kg)	All Soil ¹ Concentration (mg/kg)	Air Concentration ² Typical Worker (mg/m ³)	Air Concentration ² Adolescent Trespasser (mg/m ³)	Air Concentration ² Construction Worker (mg/m ³)
Benzo(a)anthracene	0.73	NA	NA	1.23E-07	NA
Benzo(a)pyrene	0.47	0.253	2.33E-08	3.66E-08	8.09E-08
Benzo(b)fluoranthene	0.679	NA	NA	2.02E-07	NA

Notes:

(1) - Exposure concentration for soils is the 95% UCL of the mean.

(2) - Exposure concentration for air is the UCL / (1/PEF + 1/VF).

NA - Not applicable. Chemical is not a chemical of concern for this medium.

The typical worker and adolescent trespasser are assumed to be exposed to surface soil. The construction work is assumed to be exposed to all soil.

TABLE 9-21

**SUMMARY OF CANCER RISKS AND HAZARD INDICES
AOC 9 - THE NORTHWEST CORNER OF BUILDING 3000
PHASE I AND II REMEDIAL INVESTIGATION
NAVAL AIR WARFARE CENTER INDIANAPOLIS
MARION COUNTY INDIANA**

Receptor ¹	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10 ⁻⁴	Chemicals with Cancer Risks >10 ⁻⁵	Chemicals with Cancer Risks >10 ⁻⁶	Hazard Index	Chemicals with HI >1
Construction Worker	Ingestion	1.2E-07	--	--	--	NA	--
	Dermal Contact	5.8E-08	--	--	--	NA	--
	Inhalation	7.0E-10	--	--	--	NA	--
	Total	1.8E-07	--	--	--	NA	--
Typical Worker	Ingestion	6.0E-07	--	--	--	NA	--
	Dermal Contact	1.1E-06	--	--	Benzo(a)pyrene	NA	--
	Inhalation	5.0E-09	--	--	--	NA	--
	Total	1.7E-06	--	--	Benzo(a)pyrene	NA	--
Adolescent Trespasser	Ingestion	1.1E-07	--	--	--	NA	--
	Dermal Contact	1.1E-07	--	--	--	NA	--
	Inhalation	9.3E-11	--	--	--	NA	--
	Total	2.3E-07	--	--	--	NA	--

Notes:

1 - Construction workers are assumed to be exposed to surface and subsurface soil. Typical workers and adolescent trespassers are assumed to be exposed to surface soil.

TABLE 9-22

TERRESTRIAL FLORA AND FAUNA COPC SELECTION TABLES - AOC 9
 PHASE II REMEDIAL INVESTIGATION
 NAVAL AIR WARFARE CENTER, INDIANAPOLIS
 MARION COUNTY, INDIANA

Chemical	Frequency of Detection	Range of Detections			Location of Maximum	Ecological Screening Level (1)	Number Exceeding Screening Level	Background Concentration	Number Exceeding Background Concentration	Selected as a COPC?	Rational
		Min.	Max.	Avg. All							
Volatile Organics (ug/kg)											
TOLUENE	1/6	2.0	2.0	2.0	AOC09DP04	1400	0	ND	NA	N	Below screening value
TRICHLOROETHENE	2/6	1.0	4.0	4.0	AOC09DP04	3000	0	ND	NA	N	Below screening value
Semivolatile Organics (ug/kg)											
	1/6	230	230	199	AOC09DP02	NV	NA	ND	NA		No screening value
ACENAPHTHENE	1/6	56.0	56.0	56.0	AOC09DP03	1206	0	ND	NA	N	Below screening value
ANTHRACENE	3/6	48.0	140.0	136.7	AOC09DP03	1206	0	ND	NA	N	Below screening value
BENZO(A)ANTHRACENE	5/6	200	730	387	AOC09DP03	1206	0	ND	NA	N	Below screening value
BENZO(A)PYRENE	5/6	130	470	270	AOC09DP03	700	0	ND	NA	N	Below screening value
BENZO(B)FLUORANTHENE	5/6	190	790	453	AOC09DP03	1206	0	ND	NA	N	Below screening value
BENZO(G,H,I)PERYLENE	5/6	76.0	350	191	AOC09DP03	1206	0	ND	NA	N	Below screening value
BENZO(K)FLUORANTHENE	5/6	170	750	345	AOC08DP02	1206	0	ND	NA	N	Below screening value
	1/6	65.0	65.0	65.0	AOC08DP03	NV	NA	ND	NA		No screening value
CHRYSENE	5/6	250	800	422	AOC09DP03	1206	0	ND	NA	N	Below screening value
DI-N-BUTYL PHTHALATE	1/6	42.0	42.0	42.0	AOC09DP03	6010	0	ND	NA	N	Below screening value
	5/6	400	1300	662	AOC09DP03	1206	1	ND	NA		Above screening value
FLUORENE	1/6	61.0	61.0	61.0	AOC09DP03	1206	0	ND	NA	N	Below screening value
INDENO(1,2,3-CD)PYRENE	5/6	86.0	370	198	AOC09DP03	1206	0	ND	NA	N	Below screening value
PHENANTHRENE	5/6	150	620	343	AOC09DP03	1206	0	ND	NA	N	Below screening value
	5/6	450	1300	665	AOC09DP03	1206	1	ND	NA		Above screening value
Inorganics (mg/kg)											
LEAD	2/2	9.7	11.6	10.7	AOC09DP04	70	0	61.7	0	N	Below screening value

NA - Not Applicable

ND - Not Detected

NV - No Value Established

(1) References for screening levels are presented on Table 2-17

TABLE 9-23

SUMMARY OF TERRESTRIAL WILDLIFE MODEL HAZARD QUOTIENTS - AOC 9
 CONSERVATIVE AND AVERAGE INPUTS
 PHASE I AND II REMEDIAL INVESTIGATION
 NAVAL AIR WARFARE CENTER, INDIANAPOLIS
 MARION COUNTY, INDIANA

COPCs	Conservative Inputs				Average Inputs			
	Meadow Vole		American Robin		Vole		Robin	
	NOAEL HQ _n	LOAEL HQ _i	NOAEL HQ _n	LOAEL HQ _i	NOAEL HQ _n	LOAEL HQ _i	NOAEL HQ _n	LOAEL HQ _i
Volatile Organics								
TOLUENE	6.50E-05	6.50E-06	--	--	1.24E-06	1.24E-07	--	--
TRICHLOROETHENE	6.31E-03	6.31E-04	--	--	1.32E-04	1.32E-05	--	--
Semivolatile Organics								
2,2'-OXYBIS(1-CHLOROPROPANE)	--	--	--	--	--	--	--	--
ACENAPHTHENE	3.54E-03	1.77E-03	1.23E-02	1.23E-03	1.69E-05	6.41E-06	2.01E-04	2.01E-05
ANTHRACENE	1.66E-03	1.66E-04	3.00E-02	3.00E-03	4.34E-06	4.34E-07	4.92E-04	4.92E-05
BENZO(A)ANTHRACENE	8.06E-01	8.06E-02	1.61E-01	1.61E-02	7.42E-04	7.42E-05	1.39E-03	1.39E-04
BENZO(A)PYRENE	5.19E-01	5.19E-02	1.04E-01	1.04E-02	4.89E-04	4.89E-05	9.71E-04	9.71E-05
BENZO(B)FLUORANTHENE	8.73E-01	8.73E-02	1.74E-01	1.74E-02	8.20E-04	8.20E-05	1.63E-03	1.63E-04
BENZO(G,H,I)PERYLENE	3.87E-01	3.87E-02	7.71E-02	7.71E-03	3.31E-04	3.31E-05	6.87E-04	6.87E-05
BENZO(K)FLUORANTHENE	8.29E-01	8.29E-02	1.65E-01	1.65E-02	5.92E-04	5.92E-05	1.24E-03	1.24E-04
CARBAZOLE	7.18E-02	7.18E-03	1.43E-02	1.43E-03	3.25E-04	3.25E-05	2.34E-04	2.34E-05
CHRYSENE	8.64E-01	8.64E-02	1.78E-01	1.78E-02	8.00E-04	8.00E-05	1.52E-03	1.52E-04
DI-N-BUTYL PHTHALATE	8.44E-06	2.53E-06	8.41E-01	8.41E-02	1.64E-07	5.53E-08	1.37E-02	1.37E-03
FLUORANTHENE	1.15E-01	5.74E-02	2.86E-01	2.86E-02	1.32E-04	6.56E-05	2.45E-03	2.45E-04
FLUORENE	5.39E-03	2.70E-03	1.34E-02	1.34E-03	1.55E-05	7.75E-06	2.19E-04	2.19E-05
INDENO(1,2,3-CD)PYRENE	4.06E-01	4.06E-02	8.15E-02	8.15E-03	3.42E-04	3.42E-05	7.11E-04	7.11E-05
PHENANTHRENE	9.06E-01	9.06E-02	1.81E-01	1.81E-02	9.71E-04	9.71E-05	1.24E-03	1.24E-04
PYRENE	1.91E-01	1.15E-01	2.86E-01	2.86E-02	2.11E-04	1.27E-04	2.36E-03	2.36E-04

-- No toxicity data was available for this contaminant so an HQ could not be calculated

Shaded cells are contaminants with HQs greater than 1

HQ_n - Hazard Quotient for the NOAEL

HQ_i - Hazard Quotient for the LOAEL

TABLE 9-24

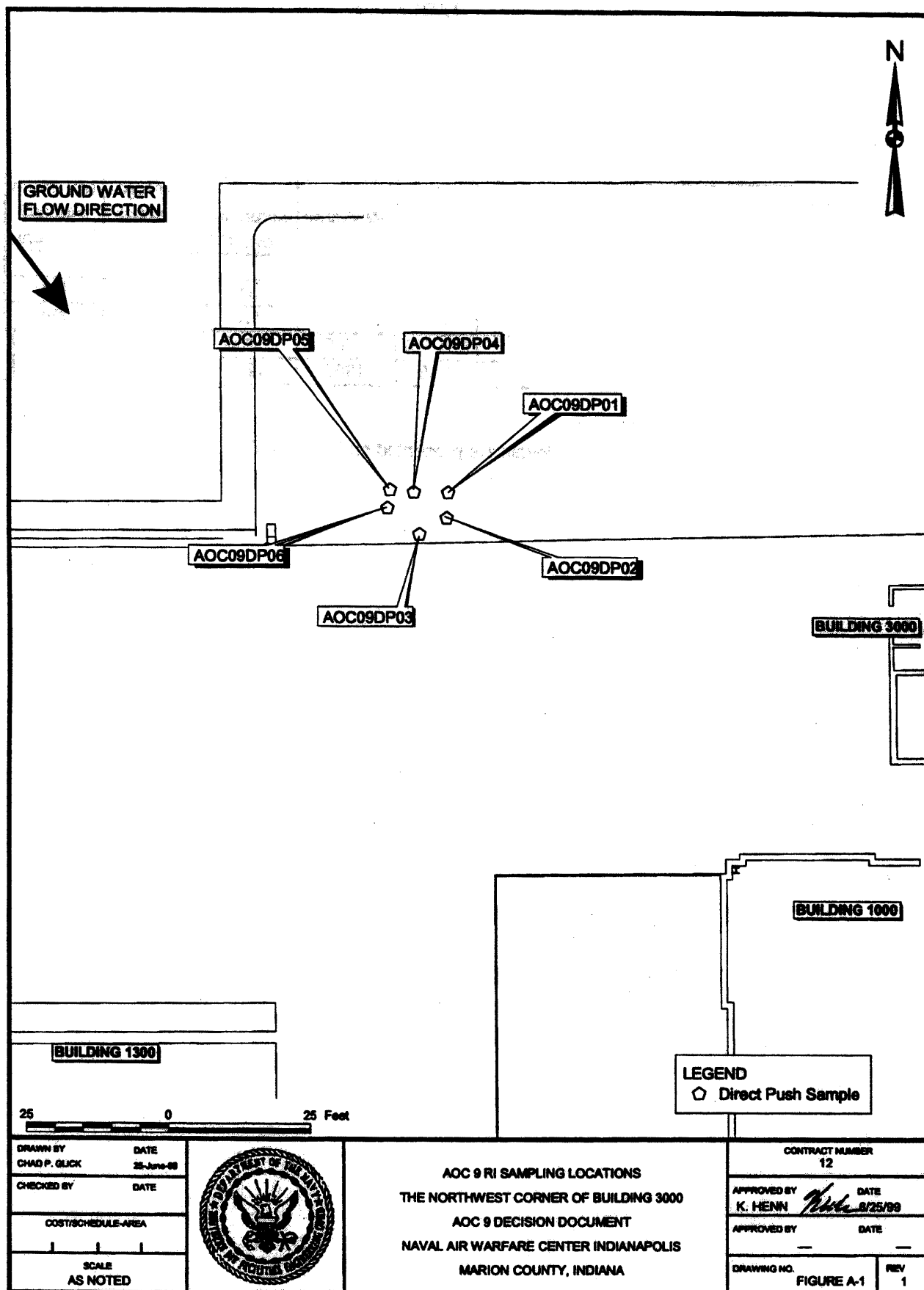
TERRESTRIAL FLORA AND FAUNA HAZARD QUOTIENTS - AOC 9
 PHASE II REMEDIAL INVESTIGATION
 NAVAL AIR WARFARE CENTER, INDIANAPOLIS
 MARION COUNTY, INDIANA

COPC	Average Result	Maximum Detection	Screening Level (1)	Average Hazard Quotient	Maximum Hazard Quotient
Semivolatile Organics (ug/kg)					
2,2'-OXYBIS(1-CHLOROPROPANE)	199.167	230	NV	NA	NA
CARBAZOLE	170	65	NV	NA	NA
FLUORANTHENE	681.667	1300	1206	0.6	
PYRENE	655	1300	1206	0.5	

NA - Not Applicable

NV - No Value Established

(1) References for screening levels are presented on Table 2-17



AOC 9

APPENDIX B

INSTITUTIONAL CONTROL PLAN

AREA OF CONCERN (AOC) 9 IC PLAN

A. DESCRIPTION OF THE SITE:

AOC 9 consists of the Northwest Corner of Building 3000 located within the NAWC Indianapolis facility. The NAWC is located in Marion County, east of downtown Indianapolis and is bordered by East 21st Street to the north, Arlington Avenue to the west, East 16th Street to the south and Windsor Branch, a surface water tributary to the east.

B. IDENTIFICATION OF RESIDUAL RISK(S) PRESENTED:

Soil sampling conducted at AOC 9 identified benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene as exceeding federal and state risk-based screening criteria for residential and industrial exposures. Since the future anticipated uses of the AOC 9 were assumed to be non-residential, the residential criteria are not applicable and potential risks to residential receptors were not evaluated. No groundwater samples were collected at AOC 9 although, the available data suggests that chemicals in soil are not migrating down gradient of the site. Human health risks for the identified receptor groups were within acceptable levels. Based upon the data collected at this site, there are no human health risks associated with industrial use of AOC 9.

C. TYPES OF ICS IMPOSED:

The Navy intends on utilizing deed provisions to impose upon future transferees, their successors, assigns, lessees or licensees of the real property and facilities which encompass AOC 9, those restrictions necessary to ensure continued protection of human health and the environment. Those restrictions may be summarized as follows:

1. A prohibition against residential or residential-like uses of the property without prior authorization from the Navy (the reasonable anticipated future use at this site is industrial);
2. A requirement for annual compliance reporting by the future owner(s) of the NAWC property of the fact that only industrial uses of the property have been allowed.

D. PROPOSED DEED LANGUAGE IMPLEMENTING ICS:

The following land and groundwater use restriction provisions or their substantial equivalents will be incorporated into the quitclaim deed which shall effect the transfer of the property and facilities encompassing AOC 9 to any transferee:

1. The Grantee its successors, assigns, lessees, and licensees are prohibited from utilizing any portion of the real property and facilities encompassing AOC 9 as depicted in the attached survey for residential or residential type uses without the prior written authorization from the Navy. Such prohibited uses shall include, but not be limited to, nurseries, child or full time adult day care facilities or any playground area. Any additional site evaluation(s), risk assessment(s) and potential remedial measures as may be necessary if future usage of the property is for other than industrial purposes shall be without costs to the United States.

E. PARTY RESPONSIBLE FOR MONITORING THE INTEGRITY AND EFFECTIVENESS OF IMPOSED CONTROL(S):

The Navy intends on maintaining responsibility for overseeing the integrity and effectiveness of the IC remedy selected for AOC 9. The Navy plans on doing this by requiring annual IC compliance reporting by subsequent transferees of the property and facilities encompassing this site and by conducting all required CERCLA Five-Year Reviews.

F. PROCEDURES FOR REPORTING AND ENFORCING AGAINST IC VIOLATIONS

Should the Navy learn that any subsequent owner, occupant or third party has violated or caused to be violated any IC associated with AOC 9, the Navy shall evaluate at that time whether it would be appropriate to exercise the response authorities granted to it under CERCLA Section 104 (42 USC 9604), the Defense Environmental Restoration Program (DERP) (10 USC 2701 et. seq.) and Executive Order 12580, in order to ensure continued protectiveness of the site remedy implemented. The Navy will also evaluate the appropriateness of pursuing whatever rights it may have contractually or otherwise and/or for cost recovery under CERCLA Section 107 (42 USC 9607) against the violator of that IC(s). The Navy shall also promptly notify by letter the appropriate IDEM and U.S. EPA representatives upon learning of any IC violation(s) so that U.S. EPA can initiate whatever enforcement action U.S. EPA may believe to be appropriate at that time against such violator(s).

To ensure the opportunity for the Navy and U.S. EPA to be able to enforce the ICs associated with AOC 9, the Navy shall insert the following provisions or their substantial equivalent into the quitclaim deed which shall effect the transfer of the property encompassing AOC 9 to any third party:

1. The Navy reserves a right of access to all portions of the property for environmental investigation, remediation or other corrective actions. This reservation includes the right of access to and use of, to the extent permitted by law, available utilities at reasonable cost. These rights shall be exercisable in any case in which a remedial action, response action or corrective action is found

to be necessary by the Navy after the date of conveyance of the property, or in which access is necessary to carry out a remedial action, response action, or corrective action on adjoining property. Pursuant to this reservation, the Navy, the U.S. EPA and the State of Indiana, and their officers, agents, employees, contractors and subcontractors shall have the right (upon reasonable notice to the Grantee or the then owner and any authorized occupant of the property) to enter upon the Property and conduct investigations and surveys, to include drillings, test-pitting, borings, data and record compilation, and other activities related to environmental investigation and to carry out remedial or removal actions as required or necessary under applicable authorities, including but not limited to monitoring wells, pumping wells, and treatment. Any such entry, including such activities, responses or remedial actions, shall be coordinated with the Grantee or its successors assigns, and tenants and shall be performed in a manner which minimizes interruption with Grantee's activities on the property.

2. The Grantee, its successors, assigns, lessees and licensees are prohibited from unreasonably interfering with any environmental investigation or remedial activities to be undertaken by the Navy on the property encompassing AOC 9 or surrounding NAWC property.

G. ASSURANCES REGARDING COMPLETION OF THE CERCLA FIVE-YEAR REVIEW PROCESS:

It is the Navy's intent to fully comply with the requirements of CERCLA as they may continue to apply to AOC 9 and to continue in part to oversee the long term effectiveness of the selected remedy through the timely undertaking and completion of CERCLA Five-Year Reviews.

H. IC RECORDATION / NOTICE REQUIREMENTS:

Those specific ICs reflected in this ICP and in the Proposed Plan (PP) and Decision Document (DD) for AOC 9 will be reflected in the quitclaim deed which shall be used to effect the transfer of the property encompassing AOC 9 and such deed will be recorded in the appropriate local property records office for the property by the transferee(s) of the real property upon which the site is situated. The transferee will be provided advance notice of those ICs and all pertinent site conditions by first being provided with a copy of this plan, the Environmental Baseline Survey (EBS) and requisite Finding of Suitability to Transfer (FOST) prepared by the Navy in connection with such transfer.

I. COMMITMENT TO PRE-TRANSFER MEETING:

To the extent appropriated funds may be available for such purposes, the Navy commits to meet at least five days before transfer with any and all prospective transferees of the real property and facilities encompassing AOC 9 in order to ensure that such transferee(s) fully understands the provisions of this plan.